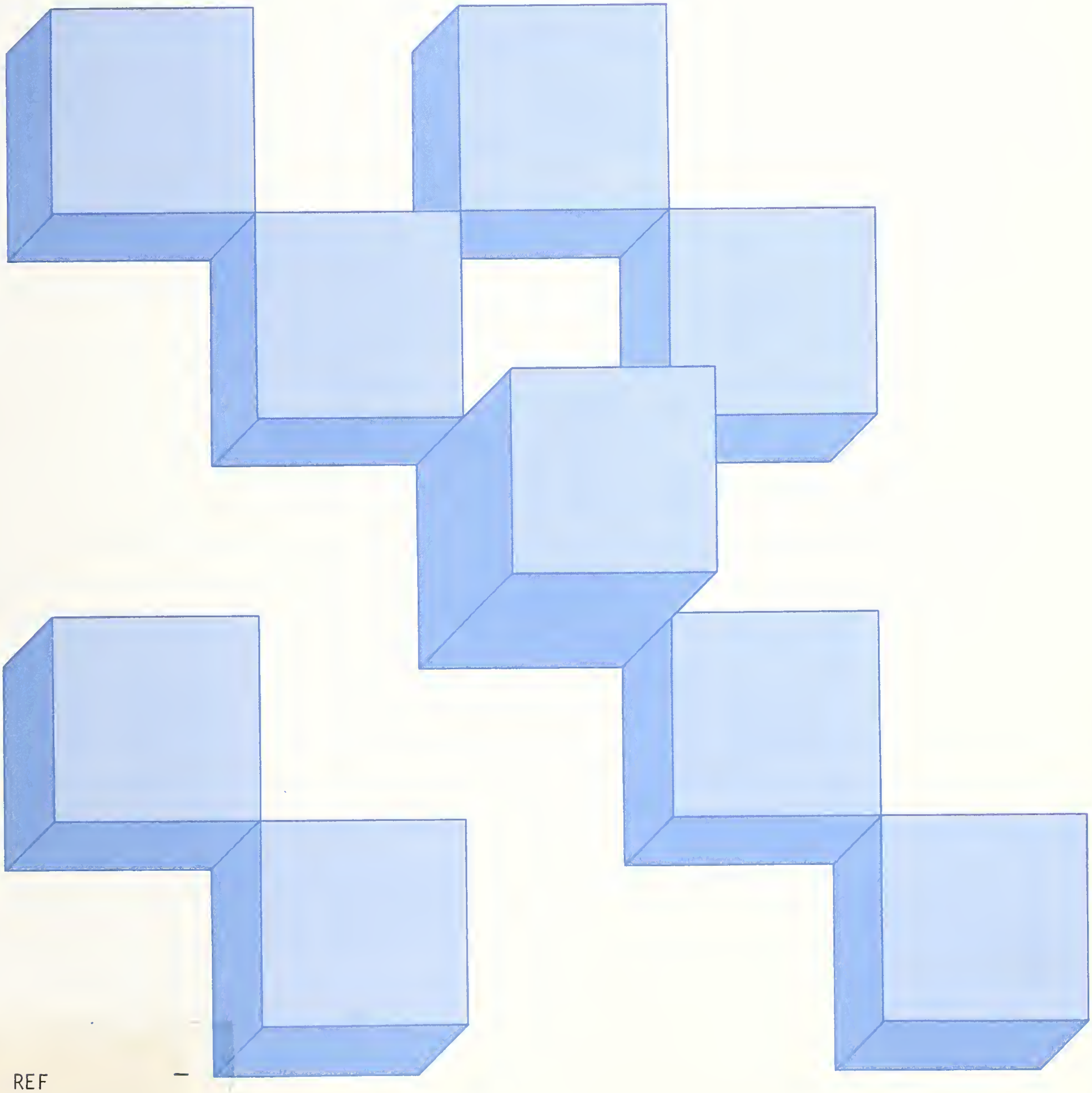
NIH Extramural Programs

July 1980

U.S. DEPARTMENT
OF HEALTH
AND HUMAN SERVICES

Public Health Service

National Institutes of Health



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—   REF

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U.S. DEPARTMENT
OF HEALTH
AND HUMAN SERVICES
Public Health Service
National Institutes of Health
Office of Extramural Research and Training

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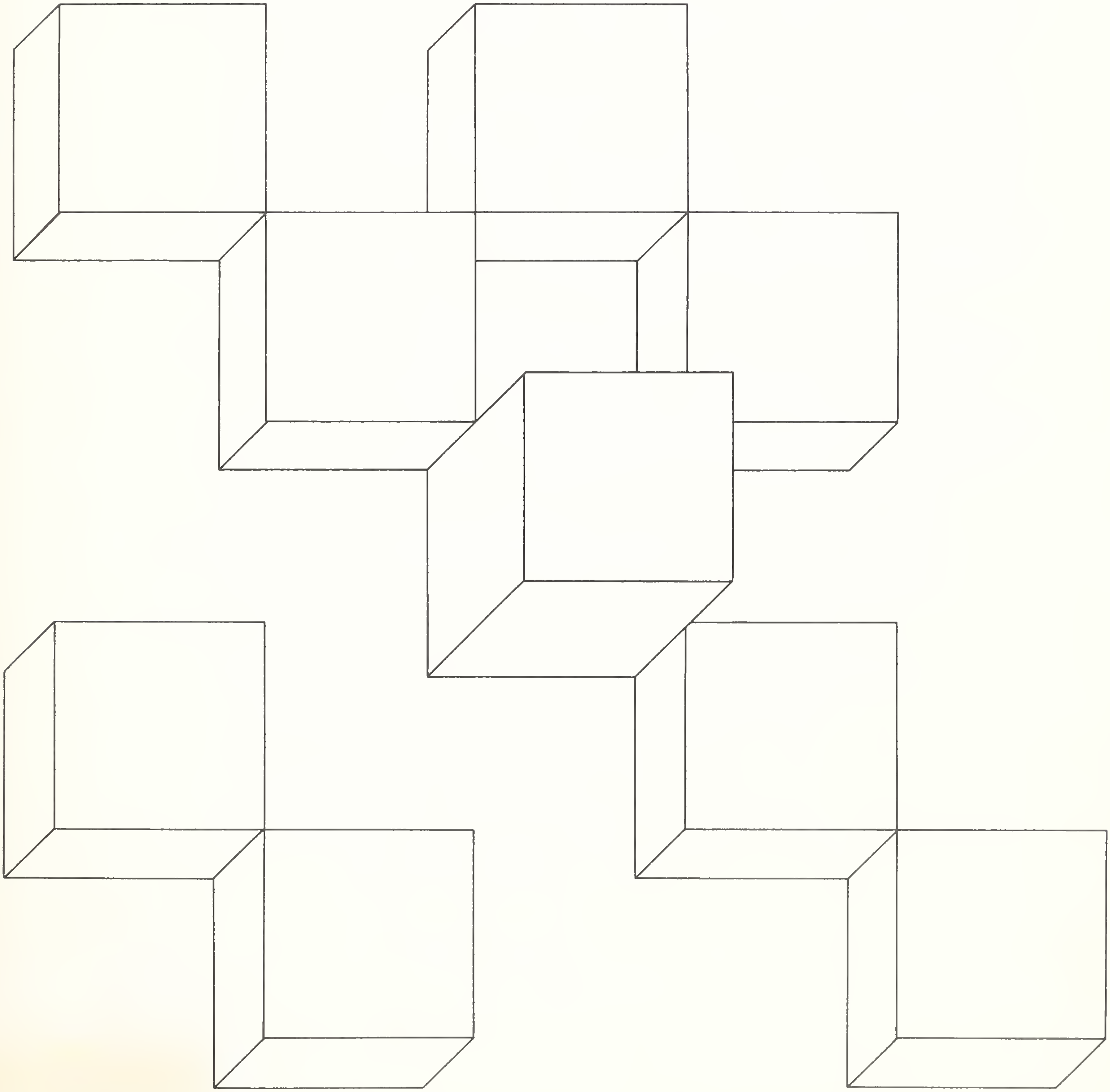

Extramural Programs

The mission of the National Institutes of Health (NIH) is to improve human health through biomedical research. The programs of the NIH are oriented principally toward basic and applied scientific inquiry related to the causes, diagnosis, prevention, treatment, and rehabilitation of human diseases and disabilities; the fundamental biological processes of growth, development, and aging; and the biological effects of the environment. In addition, the NIH sponsors training of research personnel; career development of new and established scientists; evaluation and dissemination of new information about medicine and health; construction of cancer research facilities and provision of other research resources; and improvements in biomedical communications.

The NIH today provides about 41 percent of all the funds in the United States for biomedical research and development and about 67 percent of all Federal funds for this purpose. About 10 percent of the NIH budget each year is allotted to the intramural programs (biomedical research conducted in its own laboratories and clinics). About 81 percent of the budget sponsors projects and activities in other organizations and institutions through grants and contracts (the extramural programs). The remaining portion of the budget covers the cost of administering both the intramural and extramural programs, operating the National Library of Medicine, and capital improvements and major repairs of NIH facilities.

This publication, which replaces the earlier *Guide to NIH Programs and Awards,* is a compendium of the scientific programs of the NIH components that award grants and contracts. It indicates current areas of research emphasis, highlights the special interests of each awarding component, and identifies specific NIH offices one may contact for further information about particular programs, policies, and procedures. I am pleased to present this information to the scientific community and the general public.

William F. Raub, Ph.D.
Associate Director for Extramural
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Award Mechanisms

The National Institutes of Health (NIH) relies on two major funding mechanisms, the grant and the contract, as the administrative instruments for accomplishing its program goals through the efforts of scientists outside the NIH.

In general, grants are awarded when the principal purpose is to support or stimulate research or related activities and there is no substantial involvement of the NIH staff in the performance of the activity. Research and development contracts are awarded with a view toward obtaining specific types of information, products, or services, as negotiated and monitored by NIH staff.

A third funding instrument, the cooperative agreement, is being introduced pursuant to the Federal Grant and Cooperative Agreement Act of 1977 (PL 95-224). The cooperative agreement, like the grant, is oriented to support or stimulation of the recipient's activities but provides for substantial involvement on the part of the funding agency during the period of performance. Programs supported through this mechanism will be announced as guidelines are developed. In general, the application, review, and award process will be similar to that which now obtains for grants.

GRANTS

Grants for health-related research projects or activities make up the largest category of funding provided by the NIH. These grants encourage and support meritorious projects or programs in all scientific fields related to health and span the spectrum from basic and applied research in laboratory and clinical settings to evaluation, demonstration, and dissemination of new medical technologies. In addition, grants are awarded to create and sustain certain special resources or facilities for such research.

Most applications for grant support originate with an individual investigator who develops a proposed plan for research within an area of interest to NIH. In addition, NIH employs a variety of mechanisms to stimulate submission of applications in areas of high priority or special concern, including program announcements, requests for applications (RFAs), and special awards.

Grants may be awarded to public and private nonprofit organizations and institutions that sponsor and conduct biomedical research and development. These include universities, medical and other health professional schools, colleges, hospitals and research institutes, and Federal institutions. Grants may provide funds for essentially all reasonable costs of the activity, but current legislation includes a requirement for cost sharing. Detailed information regarding which types of costs are allowable and which are not can be found in the Public Health Service *Grants Policy Statement*. Readers are encouraged to consult their institutional business officers on such administrative matters.

There is no specific limitation on the number or dollar amount of research grants that may be awarded to any one institution or on behalf of any one investigator. However, in the latter case the ability of a scientist to devote adequate time to the project, whether or not any part of his or her salary comes from the grant, is a factor in the review of the application.

Applicants must provide detailed information to justify their proposals (see below). Instructions are included in the research grant application kit (Form PHS 398), which may be obtained either from the organization's application control office or from the Division of Research Grants, National Institutes of Health, Bethesda, Maryland 20205.

Grant applications submitted to the NIH are received by the Division of Research Grants (DRG). For most applications, the following schedule of deadlines obtains:

- February 1, June 1, and October 1 for National Research Service Awards, Research Career Development Awards, program projects and centers, all competing renewal applications and all supplemental applications; and
- March 1, July 1, and November 1 for other new research grant applications.

Sometimes other deadlines are announced for particular RFAs.

All applications that are related to the NIH mission are numbered and assigned to an initial review group (IRG) for scientific merit review and also to a bureau, institute, or division (BID) for possible funding. Applicants are notified of these assignments by the return of a card which is submitted with the application.

Applications are subjected to a peer review process that is based upon two sequential levels of review, both of which are required by law. The first level of review is performed by scientific review groups composed primarily of non-Federal scientists selected for their competence in particular scientific areas. An NIH health scientist administrator serves as executive secretary of the review group. The task of the IRGs is to evaluate the grant application for scientific and technical merit.

In considering the scientific merit of each application, the members of the IRG assess:

- the scientific and technical significance and originality of the proposed research;
- the adequacy of the methodology;
- the qualifications and experience of the investigator(s);
- the suitability of the facilities; and
- the appropriateness of the budget requested.

For each application a recommendation of approval, disapproval, or deferral for additional information is made by majority vote. In addition, for each application recommended for approval, each member of the IRG individually and privately records a numerical score that reflects a personal evaluation of the scientific merit of the proposed research or training. The numerical score is based on a scale of 0.5 increments from 1.0 (the best) to 5.0 (the least acceptable) score. After the meeting, the executive secretary averages the individual reviewers' scores for each approved application and multiplies by 100 to provide a three-digit rating known as a priority score. Priority scores assist the staff of the BID in determining which applications are to be funded.

If information is needed that is not in the application and cannot be obtained by telephone or mail, a project site visit may be made either prior to the IRG meeting or after an IRG deferral recommendation. The executive secretary selects the members of the project site visit team, accompanies them, and coordinates the proceedings. Typically two or more members of the IRG, representatives from the awarding BID, and, when necessary, ad hoc consultants constitute the site visit team. The IRG is informed of the site visit team's findings and recommendations.

After the IRG meets, the executive secretary prepares a summary statement for each application and forwards it to the appropriate BID for review by its council or board. The summary statement contains a description and critique of the proposed activity, an explanation of the recommendation of the IRG, a recommended budget, and notations about any special points, such as a split vote or a potentially hazardous experimental procedure.

The second review of grant applications is made by the national adivsory council or board associated with the awarding BID. These groups are composed of both scientific and lay representatives who are chosen for their expertise, interest or activity in matters related to the individual BID missions. Council or board recommendations are based on judgments about both scientific merit and relevance to BID program goals. In general, the NIH may make a grant only in response to those applications that are approved by a national advisory council or board.

Research Grants

Research Project Grants

Research project grants are awarded to an institution on behalf of a principal investigator to facilitate pursuit of a single scientific focus or objective in the area of an investigator's interest and competence.

Institutional sponsorship assures the NIH that the institution will provide facilities necessary to accomplish the research and will be accountable for the grant funds. A research grant may occasionally be awarded directly to an individual who has access to adequate facilities and resources for conducting the research.

Applications are accepted for health-related research and development in all areas within the scope of NIH's mission, with special emphasis on the programs described in this compendium. With the exception of a small number of special programs specifically mandated by the Congress, requests for the following are not accepted: activities that lack a research component; equipment and alteration or renovation of laboratory space that is not required for conduct of a specific research project; and grants exclusively for travel to meetings or conferences, except those from scientific or professional societies or similar organizations.

Program Project Grants

Program project grants are awarded to an institution on behalf of a principal investigator for the support of a broadly based, often multidisciplinary, long term research program with a particular major objective or theme. A program project involves the organized efforts of groups of investigators who conduct research projects related to the overall program objective. The grant can provide support for the projects and for certain shared resources needed for the total research effort. Each project supported under a program project grant is expected to contribute to the overall program objective.

Center Grants

Center grants, awarded to institutions on behalf of a program director and a group of collaborating investigators, provide support for long term, multidisciplinary programs of research and development. The distinction between program project and center grants is that center grants are more likely to have a clinical orientation and are usually developed in response to announcements of the specific needs and requirements of a BID. Center grants support programs in critical health problem areas including: research and development; demonstration of advanced techniques for the diagnosis, treatment, prevention, or control of disease; education; and other related nonresearch components.

Although center grants may support both the projects and the "core" or shared resources, in some instances, only "core" costs are provided under the center grant, and project support must be requested through the project or program project grant mechanism. The staff of the appropriate BID should be consulted before a center grant application is submitted for review.

Resource Grants

Resource grants support research resources such as computer centers or general clinical research centers operating on an institutional, regional, or national basis. While the resources supported normally serve a wide range of biomedical research, they may be oriented toward specific research needs.

Conference Grants

The NIH provides funding for conferences planned for the purpose of coordinating, exchanging, and disseminating information related to its program interests. Generally, such awards are limited to participation with other organizations in the support of conferences rather than provision of sole support. Among the costs eligible for support are salaries, consultant services, equipment rental, travel, supplies, conference services, and publications. Prospective applicants are encouraged to inquire in advance concerning possible interest on the part of an awarding BID and to obtain more information on application procedures and costs eligible for support.

Research Career Development Award

The Research Career Development Award (RCDA) is a special salary grant to enhance the research capability of individuals in the formative stages of their careers. The awards are available for persons whose research potential is apparent but who need additional experience in a productive scientific environment conducive to the development of a career in independent research. The RCDA provides salary and fringe benefits so that the awardee investigator may be relieved of teaching and administrative duties. These awards are made to research and academic institutions for a 5 year period for salary support of the named investigator of up to $30,000 per year plus fringe benefits and are not renewable.

New Investigator Research Award

The New Investigator Research Award is designed to encourage both new investigators and those who have interrupted early promising research careers to develop their research interests and capabilities. To help bridge the transition from training status to that of established investigator, these awards provide funds for relatively inexperienced investigators with meritorious research ideas. Most BIDs support some form of new investigator award, depending on the specific program emphasis. Details may be found in the individual BID program descriptions.

Other Awards

NIH also provides salary support for developing laboratory and clinical investigators through more specifically focused types of awards: the Academic Investigator Award (AIA), the Clinical Investigator Award (CIA), and the Special Emphasis Research Career Award (SERCA). In general, these grants provide a maximum of $30,000 in salary support, plus fringe benefits, as well as limited research support. Their purpose is to encourage and facilitate the transition from training to independent investigation, particularly in areas of special program relevance. A more complete description of specific BID programs and eligibility requirements may be found in the individual BID program descriptions.

Research Training (National Research Service Awards)

National Research Service Awards (NRSAs) are for the training of biomedical and behavioral scientists in areas of national need. NRSAs take the form of both individual fellowships and institutional fellowships ("training grants").

Upon completion of training under the program, individuals who receive NRSA support are expected to engage in biomedical research or training for a period equal to the period of support. If an individual fails to fulfill the full service or "payback" obligation, the Federal Government is entitled to recover the stipend the individual received from the NIH plus interest beginning not later than 2 years after the award has terminated.

Individual NRSAs

Individual NRSAs are made to applicants for postdoctoral research training. Before applying, each applicant must arrange to work with a particular sponsor affiliated with an institution that has the staff and facilities needed for the proposed training. Federal laboratories, such as those of the NIH intramural programs, are among the eligible organizations. Recipients are selected through national competition.

The annual stipend is determined according to the number of years of relevant postdoctoral experience as shown in the following table. Research experience, including industrial research, teaching, internship, and residency, may be considered relevant experience.

Years of Relevant Experience	Stipend
0	$13,380
1	14,040
2	14,736
3	15,468
4	16,236
5	17,040

Upon request, non-Federal sponsoring institutions receive an institutional allowance of up to $5,000 per annum for each trainee's tuition, fees, and related costs, such as research supplies and equipment, travel to scientific meetings, and medical insurance. Funds up to $2,000 may be requested for these purposes by Federal laboratories.

Institutional NRSAs

Institutional NRSAs may be awarded to a domestic public, nonprofit private, or Federal institution to support a training program in a specific area of research. In most instances, support for both pre- and postdoctoral trainees may be requested. The applicant institution must have, or be able to develop, the staff and facilities required for the proposed program and is responsible for selection and appointment of trainees.

As of the date of the appointment to the approved training program, predoctoral trainees must have received an appropriate baccalaureate degree. An individual at the postdoctoral level must have received a Ph.D., M.D., D.D.S., D.O., D.V.M., D.P.M., Sc.D., D. Eng., D.N.S., or equivalent domestic or foreign degree.

Effective July 1, 1980, the stipend for predoctoral trainees is $5,040 per annum. The stipend for postdoctoral trainees is determined in accordance with a schedule that takes into consideration the number of years of relevant postdoctoral experience at the time of appointment. (See the above Table.)

In addition to the fixed stipends, the applicant institution may request tuition, fees, and travel costs for trainees. Also, an institutional allowance may be requested to cover such items as partial salaries of faculty members and other staff involved in providing the training, equipment, and supplies. The maximum amount of direct costs that can be requested as institutional allowance is based on a calculation providing up to $3,000 per year for each predoctoral trainee and $5,000 for each postdoctoral trainee. Indirect cost may also be requested at 8 percent of total allowable direct cost or the actual rate, whichever is less.

Institutional grants may be made for periods of up to 5 years and may be renewed. However, no individual may receive more than 8 years of support in the aggregate from an NRSA (5 years predoctoral support, 3 years postdoctoral support) unless a waiver is granted by the responsible Public Health Service agency (e.g., the NIH).

Senior Postdoctoral Fellowship

Investigators who have held the doctorate for at least 7 years may apply for a Senior Postdoctoral Fellowship. Support from this award provides stipends of up to $30,000 per year. In addition, non-Federal sponsoring institutions may request an institutional allowance of up to $5,000 annually to cover the trainee's tuition, fees, and related costs, such as research supplies and equipment, travel to scientific meetings, and medical insurance. Support of up to $2,000 may be requested by Federal laboratories to cover these costs. A Senior Postdoctoral Fellowship is ordinarily made for 1 year. The Senior Postdoctoral Fellowship is subject to NRSA payback requirements, and total time of postdoctoral support may not exceed 3 years unless a waiver is granted.

Short Term Intensive Courses

NIH support for short term research training courses provides individuals, at either the predoctoral or postdoctoral level, with specialized training in fields other than in their own primary area of training or expertise. Not only do these courses allow individuals the opportunity to master concepts and/or acquire additional skills in a new field, but they also provide the chance for principal investigators to expedite advances in their own specialized field as well. This program may also be used by individuals whose background requires enrichment in order to compete successfully for research support.

Stipends are prorated according to the level of the trainee's experience. The institutional allowance for salaries, equipment, and supplies is calculated on the basis of $3,000 per year for each predoctoral and $5,000 for each postdoctoral student, prorated for the duration of the training. There is no payback obligation.

Short Term Training for Students in Professional Schools

NIH has recently initiated a program to provide talented students in professional schools with a research experience. The program is designed to help prevent a possible future shortage of clinical investigators by attracting highly qualified professional students toward careers in biomedical and behavioral research.

Domestic schools of medicine, osteopathy, dentistry, veterinary medicine, optometry, pharmacy and podiatry may apply for grants to support short term research training for their students for discrete periods of up to 3 months. Only one application per professional school will be accepted. Research training support for these short periods of time is not subject to NRSA payback requirements.

The training institution will be responsible for the selection and appointment of trainees. Trainees must have successfully completed at least one semester at an accredited school of medicine, osteopathy, dentistry, veterinary medicine, optometry, pharmacy or podiatry prior to participating in the program. NRSA awards cannot be used to support courses which are required for the M.D., D.O., D.D.S, D.V.M., and other similar professional degrees.

The overall training is not necessarily restricted to activities in a single discipline or department. The choice of participating training sites and mentors should be carefully described to show that the institution's best environments and role models have been selected.

Minority Programs and Program Support Activities

The NIH has several programs that, in the aggregate, provide a continuum of opportunities for ethnic and racial minorities to enter into and participate in the mainstream of biomedical research. These programs are summarized below and individual BID components are described elsewhere in this compendium. The programs cover a wide range of objectives, such as strengthening the capability of minority colleges and universities to conduct research, motivating and preparing the undergraduate students of these institutions for advanced studies, and providing research training in biomedical science for their faculty and graduate students. In addition, in 1977 the NIH initiated the NIH Extramural Associates Program, which aims to familiarize minority and women's colleges and universities with, and consequently enhance their capabilities to participate in, NIH supported health research. The Extramural Associates Program is discussed in detail in the section on Communications Mechanisms.

Minority Access to Research Careers (MARC) Program, National Institute of General Medical Sciences

The program consists of the MARC Faculty Fellowship Program, the MARC Visiting Scientist Program, and the MARC Honors Undergraduate Research Training Program. Through institutional fellowships and traineeships, the MARC Program is directed toward strengthening the faculty at minority universities and colleges, and toward motivating and preparing their outstanding undergraduate students for further study in the biomedical sciences.

Minority Biomedical Support (MBS) Program, Division of Research Resources

The MBS Program is primarily designed to strengthen the institutional research and research training capabilities of colleges, universities, and health professional schools with significant enrollments of minority students. The MBS Program provides institutional support for research projects conducted by faculty and postdoctoral staff with graduate and undergraduate student assistants. It also provides support for interdisciplinary research projects, for collaborative research programs with other institutions, and for additional activities that will develop and strengthen the biomedical research capability of the institution.

Cooperative Minority Programs

The BIDs contribute to the support of minority colleges and universities through the NIH Cooperative Minority Programs, administered by the MARC Program of the National Institute of General Medical Sciences, or by the MBS Program of the Division of Research Resources. The NIH Cooperative Minority Programs promote the entry into, and direct participation of, minority institutions and individuals in research sponsored by the individual BIDs.

The disease oriented BIDs fund those portions of MBS or MARC awards that are congruent with their program missions. Such support depends upon the inclusion of meritorious health oriented research projects or fellowships in MBS or MARC applications, and on the ability of the BIDs to fund new proposals. There is a close working relationship between the participating BIDs, the MBS and/or MARC Program staff, and individual grantees. BID scientist administrators stimulate the development of categorically oriented research at universities and colleges supported by the MBS and/or MARC Programs.

The following BIDs participate in the NIH Cooperative Minority Programs:
- National Institute on Aging,
- National Institute of Allergy and Infectious Diseases,
- National Institute of Arthritis, Metabolism, and Digestive Diseases,
- National Cancer Institute,
- National Institute of Child Health and Human Development,
- National Institute of Dental Research,
- National Eye Institute,
- National Heart, Lung, and Blood Institute, and
- National Institute of Neurological and Communicative Disorders and Stroke.

Minority Hypertension Research Development Summer Program (MHRDSP), National Heart, Lung, and Blood Institute

The Minority Hypertension Research Development Summer Program supports the development of minority school faculty and/or graduate students in areas of research, prevention, control, and education related to hypertension. The Program funds selected Hypertension Training Centers, which engage in cooperative research and training programs with minority universities and colleges.

CONTRACTS

NIH research and development contracts are awarded to nonprofit and commercial organizations to foster and direct scientific inquiry toward particular new areas of research and development and to utilize advances in knowledge and technology to search for solutions to specific questions. Contracts are conducted with close NIH direction and monitoring; negotiations afford the contracting parties flexibility in establishing the details of their relationship at the outset of the contract work.

Most NIH research and development contracts are of the cost-reimbursement type, i.e., the NIH pays the contractor all reasonable and allowable costs in performing the project. In addition, fees may be paid to those contractors that are commercial organizations.

The initiative for R & D contracts generally comes from NIH staff and advisors. Workshops and conferences often are a source of invaluable ideas and guidance. NIH staff members translate ideas for contract projects into Requests for Proposals (RFPs), which are formal solicitation documents that define program requirements and describe criteria by which project proposals will be evaluated.

In order to reach all segments of the scientific community, contract opportunities and requirements are advertised as widely as possible. Solicitations always appear in the *Commerce Business Daily.* (Subscriptions are available from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.) Announcements of the availability of most RFPs also are published in supplements to the *NIH Guide for Grants and Contracts.* Some specific project solicitations also appear in scientific and medical journals and other publications. Unsolicited proposals may be considered for awards when they fulfill specific needs for the NIH component and when there is an adequate justification for a noncompetitive award.

The review process for research and development contracts is similar in principle to that for grants; but in practice, contract projects generally undergo more stages of review than do grant applications. In compliance with the law that mandates peer review for NIH contract projects, the concept of each one is evaluated by a scientific review group composed largely of non-Federal advisors. Requests for Proposals (RFPs) are then developed by BID business and program staff and are issued after careful review in the BID (and in the Office of the Director, NIH, for large-dollar solicitations).

Solicited contract proposals undergo further review by external advisors whenever the offerors are expected to propose how some or all of the work is to be done. All proposals are evaluated strictly in accordance with the evaluation criteria indicated in the RFP. Recommendations of the reviewers, together with the results of separate business evaluations of the proposals by NIH staff, provide the basis for further discussions with organizations having high-ranking proposals, for further review and selection of awardees by BID senior staff, and for final negotiations with contractors selected for awards.

BIDs occasionally make awards in response to unsolicited contract proposals. In this case, the peer reviewers routinely evaluate the concept and the approach at the same session, while later evaluation and negotiation are are the same as for solicited contracts.

In contrast to the statutory requirement for grants to be approved before being funded, the advisory councils/boards are not required to certify their approval of individual contract projects. They may nonetheless become quite involved in a BID's research planning process, which would include the allocation of resources for both grants and contracts.

Research Contracts

These contracts focus on a specific research problem that has been identified by an NIH component and requires central direction, control, and management. Clinical trials of new or existing therapies may be funded by this mechanism. Some examples are:

- evaluating chemotherapeutic modalities against cancer;
- exploring the safety and efficacy of regimens to control heart attacks; and
- characterizing immunological phenomena to extend organ transplant capabilities.

Development Contracts

Awarded for projects to produce substances, devices, systems, or other approaches to diagnose, prevent, treat, or control diseases, these contracts include development of:

- effective vaccines or drugs;
- surgical techniques or medical devices to assist or replace organ functions; and
- sophisticated instruments to refine laboratory or clinical procedures.

Demonstration Contracts

Recent developments in some NIH programs have led to opportunities to demonstrate the feasibility of applying these advances to individual or community situations to solve certain health problems. Where closely controlled or directed by the NIH, these activities are also conducted under contract awards. These include many of NCI's cancer control programs and NIDR-sponsored demonstrations of effectiveness of fluoride mouthwashes.

Research and Development Support

NIH programs occasionally identify requirements for certain types of resources or services to aid ongoing research and development activities. When specific requirements and approaches can be well defined in advance, contracts may be awarded for:

- research services, e.g., data processing, drug testing, toxicology screening, or logistics services; and
- research resources, e.g., collection and distribution of materials needed to conduct biomedical research and development or to maintain special equipment or facilities for access by a number of investigators.

Scientific Communication and Evaluation

To fulfill the NIH mission to improve the health of the people of the United States, research results must be interpreted and communicated to those who can use the information. Although results of individual experiments are usually reported in scientific journals, conferences and workshops are also invaluable for analyzing the significance of new findings and for developing a scientific consensus. The NIH provides contracts for conferences and workshops considered scientifically meritorious and relevant.

RESTRICTIONS ON FUNDING

Certain activities involving human subjects may not be conducted with NIH, Public Health Service (PHS), or DHHS funds regardless of the type of grant, contract, or other funding mechanism involved:

- Research involving *in vitro* fertilization of human ova, unless previously approved by the DHHS Ethical Advisory Board, NIH, Bethesda, Maryland 20205. (Authority: 45 CFR 46.204 (3))
- Research involving pregnant women or fetuses not strictly in compliance with the provisions of Subpart B of Part 46 of Title 45 of the Code of Federal Regulations. (Authority: CFR 46.201)
- Research in the biomedical, contraceptive development, behavioral, and program implementation fields related to family planning or population research where abortion is a method of family planning. (Authority: 42 USC Ch. 6A, Sections 1004(b) (2) and 1008) This prohibition should not be construed so as to prevent scientific research into the causes of abortion and its effects. (HR Report 92-461 accompanying Public Law 92-80)
- Research that is of an experimental nature, without the written informed consent of each participant or subject, or, if the participant or subject is under 18 years of age, the written informed consent of the subject's parents or legal guardian. (Authority: Public Law 94-206, Section 411; applicability: DHHS grants, contracts, and intramural activities)

COMMUNICATIONS MECHANISMS

NIH uses a variety of mechanisms (in addition to this compendium) to inform the research community of its program interests and related policies and procedures.

The *NIH Guide for Grants and Contracts,* which is published frequently but on an irregular basis, describes programs at the NIH, announces new

NIH programs, and provides policy guidance. Supplements to the *Guide* focus on the NIH contract programs and notify interested individuals of the availability of RFPs. Principal investigators, business officers, and others not presently receiving the *Guide* may obtain further information by writing to:

Grants and Contract Guide Distribution Center
Room B3BN10, Building 31
Bethesda, Maryland 20205

The Office of Grants Inquiries in the Division of Research Grants serves as a focal point for information on NIH grant programs and application procedures. Relevant publications and single copies of application kits (if not available at an organization's application control office) may be obtained from:

Office of Grants Inquiries, Division of Research Grants
National Institutes of Health
Bethesda, Maryland 20205, (301) 496-7441

The NIH Office of Extramural Research and Training participates in seminars and meetings on a variety of topics related to NIH programs and policies. These meetings are generally organized by a host institution that assumes responsibility for developing an agenda and inviting representatives from neighboring institutions. For further information contact:

Institutional Liaison Officer, Office of Extramural Research and Training
National Institutes of Health
Bethesda, Maryland 20205

The NIH Extramural Associates Program is directed toward improving the opportunities for minorities and women to participate in and contribute to biomedical research. Participation in NIH supported research is facilitated by a thorough knowledge of the research concerns of the NIH, the support mechanisms through which this research is being accomplished, and the policies and procedures that govern the awarding of grants and contracts. The NIH Extramural Associates Program furthers the development of this knowledge at institutions that traditionally contribute to the basic preparation of minorities and women for biomedical science. Under the program, the NIH invites, on a competitive basis, key science administrators from eligible institutions to spend 6 months at the NIH. Salary, travel, and related per diem expenses are reimbursed by the NIH to the limit allowed under the Intergovernmental Personnel Act (IPA) of 1970 (PL 91-648).

Selection of Extramural Associates is based upon the sponsoring institution's demonstrated contribution to the advancement of ethnic minorities and/or women; its potential and plan for utilizing the Associate's newly gained expertise to improve its health related research or training capabilities relative to the advancement of ethnic minorities and/or women; and the qualifications, experience, and interest of the nominee.

During their tenure at the NIH, the Extramural Associates work in rotating assignments with senior members of the staff of the NIH and other Federal agencies. In addition, Associates participate in seminars, committee meetings, site visits, and in other activities related to the management of biomedical research programs. The program of working assignments and other experiences is designed individually for each participant in consultation with a senior NIH science administrator, who serves as the Associate's advisor throughout the duration of the program. For further information, contact:

Administrator, Extramural Associates Program
National Institutes of Health, Building 31, Room 1A10
Bethesda, Maryland 20205, (301) 496-9728

National Institute on Aging

MISSION

The National Institute on Aging (NIA) was established in 1974 by the Research on Aging Act (PL 93-296), which authorized the NIA to support biomedical, behavioral, and social research and research training on the aging process as well as on the diseases and other special problems and needs of the aged.

In response to this mandate, NIA has established programs in biomedical research and clinical medicine, behavioral and social sciences research, and epidemiology, demography, and biometry. These three programs comprise its extramural research activities.

NIA support for research and research training is primarily provided through the award of grants. Research contract awards are generally reserved for the development and support of research resources, particularly animal and cellular resources. NIA encourages the submission of applications and proposals for such support by means of Program Announcements and Requests for Applications (for grants) and Requests for Proposals (for contracts) as well as through individual contact. Applicants are welcome to discuss questions about the NIA mission or the format or procedure for making applications with Institute staff.

GENERAL PROGRAMS

Biomedical Research and Clinical Medicine

This program provides support through all award mechanisms to further the goals of understanding the aging process and improving the ability of the individual and health care practitioner to respond to the diseases and other clinical problems of the aged. Included are studies on the mechanisms and expressions of aging, with research on immunology, genetics, molecular biology, biochemistry, pharmacology, nutrition, endocrinology, neuroscience, dermatology, and musculoskeletal function. The program is divided into three separate areas of research.

Basic Aging Program

The Basic Aging Program (BAP) encourages fundamental molecular and genetic research and research training on the biology and mechanisms of aging. The four research areas that comprise this program are: genetic and cellular aging, genetics and comparative aging, theoretical gerontology, and dermatology. In addition, the basic aging program supports the development of characterized biologic resources to support this research. This component of the program, called genetic and cellular resources, is responsible for the supply, characterization, and related services of cell culture, invertebrates, plants, and prokaryotes necessary for aging research.

Genetic and Cellular Aging - Studies in this area are intended to determine the mechanisms of cellular aging. This can be accomplished by utilizing the technologies of cell culture, somatic-cell genetics, cell and tissue transplantation, and chimeric and genetic-mosaic biology.

Genetics and Comparative Aging - Research emphasizes genetic approaches to the study of mechanisms of senescence and longevity in laboratory animals, plants, and prokaryotes.

Theoretical Gerontology - Studies centered on simulation research (computerized and mathematical models of life systems and processes of significance to gerontology) and population genetics are encouraged in this area.

Dermatology - This area encompasses studies on the basic biology and underlying mechanisms of skin aging.

Molecular and Biochemical Aging Program

Immunology - NIA invites research applications for studies designed to characterize the immune dysfunction in aging animal models and man. Research should center on the basic mechanisms of cellular senescence, the influences of the histo-complex, the mechanisms of immunoregulation, and the immunological basis of various pathologies.

Intermediary Metabolism - Research in this area is intended to elucidate the molecular basis for age-associated changes. Study areas include the effect of aging on enzymes and enzyme systems, chromosome structure, the synthesis and degradation of macromolecules and small molecules, and the structure and function of biological membranes.

Pharmacology - Research efforts in pharmacology are directed to the distribution, metabolism, and pharmacokinetics of therapeutic drugs, drug-drug interactions, paradoxical reactions to drugs, nutritional and other factors affecting drug efficacy or toxicity, and new approaches to the study of pharmacologic agents in the elderly. Basic and clinical research is encouraged on drugs most frequently prescribed in the older age groups.

Diabetes - This area encompasses studies on the nature, epidemiology, etiology, pathogenesis, treatment, and complications of diabetes associated with the aging process. Research in the following areas is of particular interest: the basis mechanisms of hormones as they relate to diabetes and aging; the factors that influence glucose tolerance and hormone secretion; and the nature, etiology, pathogenesis, and management of changes predisposing the elderly to diabetes.

Biophysiology and Pathobiology of Aging Program

The program on Biophysiology and Pathobiology of Aging (BPAP) supports five interrelated areas of research: neuroscience, nutrition, endocrinology, geriatric medicine, and exercise physiology. Examples of relationships between these research areas are as follows: the effects of malnutrition on brain function, the consequence of exercise on cerebral circulation, the result of neural changes (such as changes in taste receptors) on the selection of food, the effect of endocrine changes on the metabolism of food substances, and the effect of neuroendocrines on neurotransmitters. In addition, this program develops and manages the supply of aging animal models essential for all research on aging.

Neuroscience - Investigating the age-related changes in the structure and function of the nervous system and facilitating the translation of basic scientific information into practical applications for the treatment and care of the elderly with neurological infirmities are the goals of this program. Examples of specific interests are the reorganizational capacity of the aged brain following neuronal loss, the extent and role of deficiencies in brain vasculature, changes in the neurophysiology of neural pathways, and the effect of the adrenocortical hormonal system on brain function and mental capacity.

Nutrition - NIA has an interest in supporting research designed to establish the functional relationships between nutrition, health, and disease in the elderly. Special emphasis is given to epidemiologic and clinical nutrition studies. Other areas of emphasis include: the effects of aging on nutrient utilization, digestion, absorption, and metabolism, and their relationship to nutrient requirements; factors which may regulate changes in lean body mass, body composition, energy balance and regulation of metabolic processes; and the links between nutrition, neural functioning, and mental deterioration, particularly in senile dementia.

Endocrinology - The objective of this part of the Biophysiology and Pathobiology of Aging Program is improved understanding of age-related changes in the endocrine system. Maintenance of body homeostasis and endocrine-related changes in food metabolism, drug metabolism, sleep disturbances, and sexual activity are areas of interest.

Research Geriatric Medicine - Studies in this area are intended to develop and support clinical and epidemiologic research on the medical problems of the elderly, including the quality of medical care, the establishment of health care requirements, and diagnostic, surgical, and preventive practices. This program element also encourages improvements in the quality of curricula in geriatrics in schools of medicine and osteopathy.

Exercise Physiology - This subprogram seeks to identify preventive and therapeutic uses of exercise in the aging population by evaluating the effect of exercise on the health and well-being of the elderly, especially regarding the effects of exercise on the metabolism of food, cerebral and peripheral circulation, and the respiratory system.

Animal Models and Pathobiology - Research emphasis in this area is placed on identifying, characterizing, and evaluating vertebrate model systems for the study of normal comparative aging changes. Other areas of interest include studies on the age-associated pathologic lesions that may simulate or replicate aging processes, and the environmental effects on survival and aging. This program manages the allocation of aging animals for use in research.

Social and Behavioral Research

The program in Social and Behavioral Research awards grants for research and research training to develop greater understanding of the social, cultural, economic, and psychological factors that affect both the process of growing old and the place of older people in society. The following broad categories outline the program.

Older People in the Changing Society

This category refers to research on age as a structural feature of society, both in the population and the organization of social roles. It includes studies of the behavior, attitudes, and status of older people within the changing social and demographic structure of society as a whole. Such studies lead to understanding of the conditions influencing the health and well-being of the elderly. Relevant research is conducted in such disciplines as sociology, anthropology, social psychology, history, economics, political science, geography, demography, and epidemiology.

Research topics related to age in the population include such areas as age composition of the population (implications for family structure, education, income maintenance programs, etc.); patterns of migration, rural-urban residence; and morbidity, mortality, and causes of death.

Also included is research on such age-related societal structures as laws, expectations and social norms; inequalities of income; differential opportunity for labor force participation and education; differential access to political opportunities (voting, office holding); environmental design (e.g., housing, communities, transportation); age-based conflict; age-integration vs. age-segregation; and lifelong education vs. age-based education.

This category stresses the relation of such topics to changes in the society, for example to the effects of increasing age-grading, to reduced economic dependence of parents on adult children, to changes in mandatory retirement ages, and to rapid shifts in values that can result in estranging older cohorts from the dominant popular culture. There is a convergence with overarching research concerns of several Institutes, such as differential life expectancy and prevention of disease and disability.

Psychological and Social Components of the Aging Process

Research on the psychological and social aspects of aging as a process includes studies of constancy and change in social or psychological characteristics, behaviors, and environmental responses of individuals as they grow old. Studies in this category lead to understanding of the conditions under which psychological, social, economic, and physiological functioning is maintained into the middle and later years. Relevant research is currently conducted in such disciplines as psychology, sociology, economics, and anthropology. The category includes such components of the biopsychological and cognitive aging process as physiological bases of aging behavior (genetic, neurological, and endocrine processes); perception and sensation (e.g., vision, audition, taste and smell, pain, touch, time perception, emotional arousal); psychomotor skills (e.g., muscular strength, reaction time, complex tasks such as driving); cognition and intelligence; memory, learning, and attention; and creativity and wisdom.

Also included are such components of the social psychological and social aging process as subjective views of the life course; personality traits and processes; social perception and emotion; attitudes, self-image, and life satisfaction; socialization; sex role differences in aging; interpersonal relationships over the life course; role sequences and transitions (e.g., bereavement, retirement, multiple or successive careers, serial marriages); social and cultural factors in health maintenance and functioning; and economic implications of biological loss (e.g., memory loss).

This category stresses the social and psychological aging components in such overarching concerns of several Institutes as nutrition, neurological and endocrine aging, and general health and health disorders (including social and psychological factors in diabetes and senile dementia).

Older People and Social Institutions

This category refers to research on relations of aging individuals to the several social institutions within which they grow old. It includes studies of the age structure of particular institutions, and of how institutions can shape older people's lives and can in turn be shaped by older people themselves. Service systems are included as examples of such institutions, although the NIA emphasis is on scientific analysis of these systems generally rather than on evaluation of specific service programs.

Included is age-related research on such topics as the family and kin networks; friendships and peer groups; economic institutions (e.g., firms, consumer organizations); leisure institutions (e.g., recreational associations, retiree organizations); religious institutions; educational institutions; political institutions (including age-based political movements); health institutions; and welfare institutions.

Cross-cutting and elaborating this content are four major emphases that are applicable to many, but not all, research approaches:

(1) The dynamic (rather than static) character of aging as a process and of social and historical change which affects the age structure of society and the ways in which individuals age. Studies utilizing a dynamic conceptual model, including longitudinal studies, comparisons of how different cohorts age, and studies of how society as a whole is changed by the aging of the population are emphasized.

(2) The interrelatedness of old age with earlier ages, as later life is interconnected with the full life-course and older people are interdependent with other people of all ages.

(3) The cultural variability of age and aging (both within a single society and across societies), as it reveals the nature and extent of cultural influences

on the aging process, the lives of older people, and the general significance of age in society.

(4) The multiple facets of age and aging, as social and psychological aging processes are in continuing interplay with biological and physiological aging.

Epidemiology, Demography, and Biometry

The program in epidemiology, demography, and biometry (EDBP) conducts and supports research on the epidemiology of health and disease as well as the interaction of demographic, social, and economic factors as they affect the health of the elderly.

Epidemiologic approaches include analysis of data from longitudinal studies and development of reference populations for integrated studies of medical, socioeconomic, and behavioral aspects of health. Information on the nutritional status of the aged is pursued through follow-up studies of the Health and Nutrition Examination Survey I. Some clinical trial activity is under development, possibly to include such subjects as hypertension in the elderly and the use of estrogens in post menopausal women. EDBP is also developing descriptive studies of events attendant to the last days of life. Special emphasis in epidemiologic research is given to senile dementia.

EDBP research in demography and economics attempts to develop an overview of the status of the older population in the United States. The program also seeks to become a focus for statistical data as they relate to health and aging. In this regard, EDBP is conducting a series of conferences on data sources on the elderly with the aim of making these data more useful for research needs.

Development of an age structured macroeconomic model of the U.S. economy is a prime EDBP objective. Included in the program are studies of intergenerational income transfers and lifetime spending patterns of the elderly. Other EDBP research focuses on aspects of the institutionalization of the elderly, differential effects of socioeconomic and demographic variables on the aged population, differential survival and mortality patterns, and a series of collaborative efforts with other agencies of the Federal government.

SPECIAL PROJECTS, PROGRAMS, OR AWARDS

Geriatric Medicine Academic Award

The Geriatric Medicine Academic Award is awarded to outstanding physicians and osteopaths who are active in the field in order to improve the quality of curricula in geriatrics and to foster clinical research in the field of aging.

Special Initiative Award

The Special Initiative Award serves as a mechanism for stimulating high quality gerontological research at the grantee institution. Support is provided for promising activities, such as research in pilot stages, which leads to the expansion, enhancement, or modification of existing aging research programs.

Senior International Fellowships in Aging

In collaboration with the Fogarty International Center, NIA enables nominees from U.S. schools of medicine, osteopathy, dentistry, and public health to enhance their experience in geriatric medicine in centers of academic and clinical excellence abroad. Applicants for this fellowship must have demonstrated productive scholarship, attained recognized stature in their profession, and contributed to the improvement of geriatric expertise of both the host and the U.S. institutions.

National Institute on Aging

Biomedical Research and Clinical Medicine Program	Project Grants	Program Project Grants	Center Grants	Research Career Development Awards	National Research Service Awards	Clinical Investigator Awards	Special Research Award	Special Initiative Award	Geriatric Medicine Academic Awards	Senior International Fellowships	Research and Development Contracts
Basic Aging	■	■	■	■	■	■	■	■		■	■
Molecular and Biochemical Aging	■	■	■	■	■	■	■	■		■	■
Biophysiology and Pathobiology of Aging	■	■	■	■	■	■	■	■	■	■	■
Social and Behavioral Sciences Program											
Cognition, Learning, and Memory	■	■	■	■	■	■	■	■		■	■
Behavioral Processes and Aging	■	■	■	■	■	■	■	■		■	■
Sociocultural and Ethnic Studies	■	■	■	■	■	■	■	■		■	■
Family Structure and Life Style	■	■	■	■	■	■	■	■			■
Work and Retirement	■	■	■	■	■	■	■	■		■	■
Demography	■	■	■	■	■	■	■	■		■	■
Epidemiology, Demography, and Biometry Program											■

National Institute of Allergy and Infectious Diseases

MISSION

The National Institute of Allergy and Infectious Dieases (NIAID) conducts and supports research contributing to a better understanding of the causes of allergic, immunologic, and infectious diseases and to the development of better means of preventing, diagnosing, and treating these illnesses.

To fulfill its mission, the Institute's extramural programs are organized into two major scientific activities: immunology, allergic, and immunologic diseases; and microbiology and infectious diseases. The directors of each program are responsible for the planning and overall management of their particular areas, and because of the natural overlapping of the scientific disciplines of immunology and microbiology, the two program directors work closely to coordinate ongoing programs and to develop new research areas.

GENERAL PROGRAMS

Immunology, Allergic and Immunologic Diseases Program (IAIDP)

This program concerns the immune system as it functions in the maintenance of health and as it malfunctions in the production of disease. Because of this dual focus, the program encompasses both basic research (immunology) and clinical research (allergic and immunologic diseases).

Basic research is supported under two headings: Immunobiology and Immunochemistry, and Genetics and Transplantation Biology. The first is aimed at providing the information necessary for understanding immune system structure and function; the second is directed more specifically at the histocompatibility antigens and their role in graft rejection, autoimmunity, immune responsiveness, and a variety of diseases.

Clinical research is supported under two main headings: Asthma and Allergic Diseases and Immunologic Diseases. Research in the area of asthma and allergic disease is directed at determining the cause and improving the diagnosis, prevention, and treatment of a variety of common allergic diseases, such as asthma, rhinitis, atopic dermatitis, and urticaria. Studies in immunologic diseases cover disorders of the human immune system, such as immunodeficiency, autoimmunity, immune complex disease, and their underlying mechanisms. Clinical aspects of transplantation and genetic predisposition to disease are supported under Genetics and Transplantation Biology. The IAIDP program areas are described in the following sections.

Immunobiology and Immunochemistry

This program area is concerned with the biology and chemistry of the immune system and its products, a broad area of inquiry that integrates the traditional disciplines of anatomy, physiology, cell biology, and biochemistry. Examples of immunobiologic studies include: the origin, maturation, localization, and interactions of immunocyte (lymphocyte, plasmocyte, macrophage) populations and subpopulations; the cellular and biochemical mechanisms responsible for antigen processing, tolerance, and enhancement; research in the mechanisms responsible for induction and regulation of the immune response; and studies on lymphokines and other substances produced by immunocytes and other cells which regulate the immune system. Examples of immunochemical studies include: the chemical structure and function of the immunoglobulin components of body fluids; the chemical structure, function, and biologic importance of naturally occurring antigens; the mechanisms of antigen-antibody reactions and the chemical basis of immunologic specificity; the regulation of immunoglobulin synthesis; the chemistry and function of immunopharmacologic agents; and chemical characterization of the molecular components and the function of accessory systems that participate in the immune response.

Lymphocyte Biology Program projects are an important component of the support mechanisms of the Immunology Program. These projects support multidisciplinary research efforts in immunobiology, cell biology, genetics, biochemistry, and immunochemistry. Such projects facilitate collaborative studies designed: to expand knowledge of the morphologic and functional heterogeneity of lymphocyte populations; to develop the capability for identification and selection of lymphocyte subpopulations with specific immune reactivity or receptor (antigen) composition; and to develop the technology to hybridize subpopulations of cells for the selective production of specific immunocytes and immunocyte products. The program seeks to develop the capability to intervene and manipulate the immune system in health and in disease.

For further information, contact:

Chief, Immunobiology and Immunochemistry Branch
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 757
Bethesda, MD 20205
(301) 496-7551

Genetics and Transplantation Biology

This program encompasses a broad approach to clarify how genes and gene products affect the immune response system. The goal of immunogenetic and transplantation biology studies is to understand the genetic and immunologic mechanisms involved in organ transplantation and in resistance or susceptibility to disease. Studies of histocompatibility and immune response systems are carried out in a variety of animal species ranging from the invertebrates to humans. Development of immunologic procedures and test systems to improve transplantation is an aim of the gene studies.

Specific areas of interest are the biologic attributes of genes in the major histocompatibility complex, as well as the biologic and chemical attributes of gene products at the cell membrane and the manner by which they influence initiation and regulation of the immune response. The research grant program supports studies on: the basic biology and chemistry of histocompatibility systems including the genes controlling minor histocompatibility antigens (sex chromosome-associated antigens); the mechanisms by which histocompatibility genes play roles in specific immune responses to chemically characterized antigens; the natural antigens associated with disease-producing organisms; the significance of post-graft immunologic response to organ transplantation as an indicator of the fate of the graft under the impact of immunologic manipulations; and comparative immunology with emphasis on phylogenetic and ontogenetic development of the immune response in several species.

The contract programs in transplantation immunology include: a collaborative study at Kidney Transplantation Centers designed to evaluate the efficacy of tissue matching for organ transplantation; evaluation of tissue typing for bone marrow transplantation and prevention of graft vs. host disease; collection, quality control and distribution of tissue-matching reagents; development and evaluation of new procedures to promote acceptance of grafts; workshops on the immunology of tissue-typing procedures and definition of specific typing sera; and publication of program-generated transplantation information (for example, reagent catalogues).

For further information, contact:

Chief, Transplantation and Immunology Branch
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 752
Bethesda, MD 20205
(301) 496-7551

Asthma and Allergic Diseases

Studies in this area concern the etiology, pathogenesis, diagnosis, prevention, and treatment of both naturally occurring and acquired allergic diseases. Current areas of inquiry include: immediate type hypersensitivity and its disorders (asthma, allergic rhinitis, atopic dermatitis, urticaria, and angioedema); the allergic phenomena affecting respiratory, gastrointestinal and cutaneous tissues; allergic reactions and disorders caused by insect bites, insect stings, foods, airborne allergens, and infectious agents; humoral antibody, particularly IgE, and the chemical mediators released by the interaction of antigen and antibody with target cells; therapy and prevention with specific antigens or drugs; manifestations of delayed hypersensitivity and contact dermatitis; mechanisms of drug reactions and chemical sensitization; and isolation and chemical characterization of the active fractions of allergenic agents.

Studies on asthma include both primary and predisposing factors that contribute to the production of asthma, such as extrinsic allergy, infection, abnormalities of the sympathetic nervous system, cellular and chemical mediators of inflammation, and pharmacologic agents.

The special Asthma and Allergic Disease Centers Program represents an effort to foster collaborative approaches that will integrate basic concepts in immunology, genetics, biochemistry, and pharmacology into clinical investigations. It is believed that translation of current immunologic concepts and methods of clinical studies will lead to an understanding of the pathophysiologic, biochemical, and immunologic mechanisms for asthma and other human allergic disorders. Objectives of this program are: to encourage collaboration between basic and clinical scientists; to provide a research environment favorable for such interaction; and to implement clinical application of adequately tested research findings and procedures. Centers are expected to have facilities and personnel capable of designing long term approaches either to the investigation of one or more major allergic disorders or to the basic mechanism of human allergic diseases.

For further information, contact:

Chief, Allergy and Clinical Immunology Branch
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 752
Bethesda, MD 20205
(301) 496-7104

Immunologic Diseases

Research in this area is designed to investigate the underlying mechanisms of disease as well as applications of basic knowledge to the etiology, prevention, and management of immunologic disorders. Studies can be conducted from either of two disciplinary approaches—clinical immunology or immunopathology. (Immunopathology studies include genetics, cytology, biochemistry, physiology, and pharmacology of the immune system.)

Pertinent areas for study are the following: immune deficiency diseases that arise either from primary defects, development, or maturation of the immune response or as secondary results from disorders affecting immune responses; clinical manifestations mediated by products of lymphocytes; diseases associated with immune complexes and autoimmune phenomena; immunodermatology, i.e., cutaneous disorders involving the immune system; and immunotherapy of disease processes.

A special feature of the Immunologic Diseases Program is the Centers for Interdisciplinary Research on Immunologic Diseases (CIRIDs). An objective of CIRIDs is to accelerate the clinical application of new knowledge of the immune system. Programs are designed to integrate and coordinate research projects in clinical immunology that are being pursued in clinical specialties (e.g., dermatology, pulmonary medicine, hematology, nephrology, rheumatology, infectious diseases, and otorhinolaryngology) with those in basic research (e.g., immunobiology, immunochemistry, microbiology, virology, genetics, biochemistry, pharmacology, general physiology, and pathology). The study of one or more allergic diseases is a necessary component of a Center's program in immunologic diseases.

Within the research framework, CIRIDs will develop special projects and activities, such as recruitment and training of clinical investigators, demonstration programs, assessment of the regional socioeconomic impact of immunologic and allergic diseases, evaluation of new treatment modalities, application of promising investigative findings, and continuing medical education of practicing physicians.

For further information, contact:

Chief, Allergy and Clinical Immunology Branch
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 752
Bethesda, MD 20205
(301) 496-7104

Research Resources and Reagents

The IAID program supports a research resources activity which crosses the four programs previously described and is intended to provide qualified investigators with reagents not otherwise available from commercial sources. Such reagents are intended to be used either as reference standards or as working quantitites of unusually difficult or expensive materials for studies related to programmatic activities. The following is a list of types of research reagents and resources with which the IAIDP is concerned:

- Histocompatibility serum bank--human tissue-typing antisera and homozygous cells;
- Mouse H-2, Ia, Thy, and Ly Alloantisera;
- Allergens--Hymenoptera venoms, purified ragweed (E, K, Ra3, Ra5) and rye grass purified antigenic fractions and some corresponding antisera, and animal models of natural allergic disease.

For further information, contact:

Head, Collaborative Projects Section
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 754
Bethesda, MD 20205
(301) 496-7105

Microbiology and Infectious Diseases Program (MIDP)

The Microbiology and Infectious Diseases Program (MIDP) supports research with the broad aim of improving health by controlling diseases caused by infectious or parasitic agents. Projects range from studies of microbial physiology and antigenic structure to collaborative trials of experimental drugs and vaccines. NIAID also supports studies on the mechanisms of resistance to antibiotics as well as research dealing with epidemiologic observations in hospitalized patients or community populations. Research is initiated largely by individual investigators and supported by grants. Such investigator-originated research focuses on all aspects of microbiology, with particular emphasis on human pathogens. Areas of inquiry in molecular microbiology include molecular anatomy and function, genetics, chemical composition, and physiological and biochemical processes. Studies in bacteriology build on these data to identify immunizing antigens and to examine mechanisms of infection, pathogenicity, and virulence as related to such problems as hospital-associated infections and mycotic and sexually transmitted diseases. Areas of inquiry in virology include molecular structure, genetics, synthesis and reproduction, characterization of viral proteins and nucleic acids, mechanisms of pathogenicity, latency or persistence, reactivation, transformation, development of antiviral substances, and systems for growth of unidentified agents. This basic information is then applied to studies of the epidemiology and control of such diseases as influenza and hepatitis. Areas of inquiry in parasitology include similar biochemical, immunological, and epidemiological studies directed toward much more complex multicellular organisms, along with studies directed toward biological control of their vectors. Program project grants and research contracts are used to fund selected projects of high Institute relevance. Areas highlighted in current research are described below.

Molecular Microbiology

The Molecular Microbiology section supports basic research in the biochemistry, physiology, and genetics of bacteria and fungi; in the synthesis of new antimicrobial agents through organic chemistry; and in the discovery of new antibiotics from natural sources. There are two areas of high relevance: the first concerns mechanisms of resistance to antimicrobial agents, either of plasmid or chromosomal origin; the second involves the manipulation of recombinant DNA molecules to better ascertain the molecular basis of pathogenicity and to create new substances of biological and medicinal utility. Projects of special interest include: the design, construction, and testing of safer DNA host-vector systems; the construction *in vitro* of biologically functional DNA or RNA molecules that combine genetic information from two sources; the utilization of plasmids, bacteriophages, viruses, and organeller DNA (chloroplast or mitochondria) as carriers to introduce this genetic information into hosts; the fragmentation of DNA or RNA molecules, and insertion of specific portions into longer segments of DNA or RNA; and the development of methods for introducing RNA into clones of cells of higher organisms.

For further information on molecular microbiology, contact:

Chief, Molecular Microbiology & Parasitology Branch
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 737
Bethesda, MD 20205
(301) 496-7114

Bacteriology and Mycology

General Bacteriology and Special Problems - In this area, the NIAID supports research on a wide variety of problems involved directly or indirectly with diseases of man caused by bacteria and related agents. Understanding the fundamental nature of the microorganisms causing these diseases is of crucial importance; investigations on the biology and physiology of bacteria, their morphology, antigenic structure and composition, toxins and endotoxins, are needed to further knowledge of the organisms involved in disease. Studies on pathogenesis, immunopathology, host defense mechanisms, diagnostic procedures, therapeutic measures, animal models, and the epidemiology of disease are indicative of the more specific disease-related research required.

Several specific disease program areas are given special attention. These include: sexually transmitted diseases, covering the entire spectrum of diseases transmitted by the sexual route; hospital associated infections, involving primarily the opportunistic infections and the immunocompromised host; and streptococcal diseases and sequelae, where special consideration is given to research on the Group B streptococci and the infections caused by them. Other diseases and problem areas, such as Legionnaires' Diseases, *Pseudomonas* infections in Cystic Fibrosis patients, and anaerobic infections, also merit increased attention.

For further information, contact:

Chief, Bacteriology and Virology Branch
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 730
Bethesda, MD 20205
(301) 496-7728

Mycobacteriology - Support is provided for studies of two major diseases, tuberculosis and leprosy, that are of importance both to the world's developing countries and also to the United States. These two diseases are components of the U.S.-Japan Cooperative Medical Science Program of the NIAID.

As a service to investigators, NIAID supports a contract to maintain a culture bank of highly characterized mycobacterial strains and another to prepare and distribute reagents for the serological identification of atypical mycobacteria.

For more information, contact:

Leprosy and Tuberculosis Program Officer
Bacteriology and Virology Branch
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 738
Bethesda, MD 20205
(301) 496-7728

Mycology - Fungi, as infectious microorganisms, have had a major impact on the national health as agents of disease. Primary fungal pathogens that are directly involved in pulmonary diseases, such as *Coccidioides immitis* and *Histoplasma capsulatum,* are significant causes of morbidity and mortality, especially in well defined geographic areas of the United States. Others, such as *Candida* and *Cryptococcus,* are important as opportunistic microorganisms, particularly in patients with impaired host defense mechanisms. Treatment of these fungal infections requires prolonged administration of relatively toxic drugs and the therapy may not always be effective. Research is encouraged on these pathogenic fungi and others, including *Blastomyces* and *Aspergillus* species.

For further information, contact:

Mycology Program Officer
Bacteriology and Virology Branch
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 738
Bethesda, MD 20205
(301) 496-7728

Bacterial Diarrheas - All diarrheas caused by bacteria and their products are of interest, including *Salmonella, Shigella, Vibrio cholerae, E. coli,* and food poisoning. The Institute supports research in the enterotoxin-mediated diarrheas, of which cholera is an excellent model. Studies are desired on the role of adherence of bacteria to the intestinal mucosa and on the pathogenesis and host response of enterotoxin and other diarrheas. To understand the mechanisms of local immunity and to determine the way to generate local or systemic immunity by safe, artificial means are of research interest to NIAID. Such information should aid in the control of cholera, *E. coli,* "traveler's" and other enterotoxin-mediated diarrheas, and may extend to other organ systems vulnerable to mucosal infections. Methods of treatment and control of diarrheas are also sought.

For further information, contact:

Enteric Diseases Program Officer
Development and Application Branch
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 750
Bethesda, Md 20205
(301) 496-7051

Bacterial Vaccines - A major goal of the bacterial vaccines program is to develop safe and effective vaccines for the prevention of bacterial diseases. A major emphasis is the immunological response of infants. Current vaccine development and testing studies relate to the following disease areas: pneumonia and otitis media caused by *Streptococcus pneumoniae;* meningitis caused by *Neisseria meningitidis, Hemophilus influenzae,* and Group B streptococci, as well as pneumococci and several other bacteria; infections caused by *Neisseria gonorrhoeae;* whooping cough caused by *Bordetella pertussis;* and Rocky Mountain Spotted Fever caused by *Rickettsia rickettsii.*

For further information, contact:

Bacterial Program Officer
Development and Application Branch
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 750
Bethesda, MD 20205
(301) 496-7051

Collaborative Clinical Trials With Antimicrobial Agents - This program sponsors collaborative clinical trials designed to improve care of patients with bacterial and mycotic infections. Approved antibiotics and new drugs that have promise but lack the economic potential to justify testing by the pharmaceutical industry are evaluated for their efficacy and safety in the prophylaxis or treatment of selected infections under controlled conditions. The program does not focus on identifying new antimicrobial agents or on preclinical tests normally performed by the pharmaceutical industry. Its objectives are to promote the development of safe antiinfective drug regimens to reduce disease mortality and morbidity, to decrease lengthy hospitalization time, and to alleviate excessive medical care costs.

For further information, write to:

Clinical Trials Program Officer
Clinical Studies Branch
National Institute of Allergy and Infectious Diseases
Building 31, Room 7A49
Bethesda, MD 20205
(301) 496-5893

Virology Support is provided for research on viruses and viral diseases that are of national and international importance to human health. Specific programs on viruses, viral diseases, and their control are explained below.

General Virology - This program encompasses the biology of viruses and the immunopathogenesis of viral diseases. Studies that will significantly advance knowledge of viral structure, replication, genetics, immunology, and interaction between virus and the host are encouraged. Such studies range from the molecular to the clinical levels, and include model laboratory systems as well as field studies. While the emphasis is on viruses that infect man, studies of other viruses and hosts are also supported when they may serve as models or offer unique approaches that may answer fundamental questions. The Institute encourages research on mechanisms of viral persistence and latency that underlie problems of chronic and recurring viral diseases. Studies of viral pathogenesis and the host's responses to viral infections or to vaccines are also encouraged through a special program of clinical virology. Research concerned with such diseases as dengue, other arthropod-borne viruses, hemorrhagic fevers, rabies, and viral diarrheas is included in the U.S.-Japan Cooperative Medical Science Program.

For further information, contact:

Virology Program Officer
Bacteriology and Virology Branch
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 736
Bethesda, MD 20205
(301) 496-7453

Viral Hepatitis - Viral hepatitis types A, B, and "non-A and non-B" constitute major health problems throughout most of the world. The NIAID is interested in studies that encompass epidemiology, biochemistry, immunology, biophysics, microbiology, animal models, and clinical trials in this area. Hepatitis B has increased in importance as more has been learned concerning its chronicity and possible role in the etiology of hepatoma. A purified, inactivated, spherical surface antigen vaccine for hepatitis B virus is currently undergoing evaluation for safety, antigenicity, and efficacy. Other studies include the treatment of chronic active hepatitis with various antiviral regimens in an attempt to eradicate the infection. New approaches to the cultivation of all of these viruses are encouraged.

For further information, contact:

Hepatitis Program Officer
Development and Application Branch
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 750
Bethesda, MD 20205
(301) 496-7051

Rapid Viral Diagnosis - This program emphasizes rapid diagnosis of viral infections in clinical medicine. Viral infections comprise the majority of infections seen by physicians in out-patient offices, clinics, and hospitals. The ultimate goal is to provide the physician with reliable methodologies and techniques so that a specific viral diagnosis can be made in time to help in the management of the patient. To do this, practical, precise, reproducible, and inexpensive rapid viral diagnostic tests must be developed that can be conducted easily and safely in physicians' offices or in small hospital laboratories.

After these tests have been developed, their use will be evaluated to determine the effect on patient care. Beneficial results could include: the appropriate use of chemotherapy and preventive measures of infection; prevention of inappropriate use of antibiotics; improved mental outlook of the patient by provision of a prognosis; shortened hospital stay; elimination of some invasive diagnostic tests; and prevention of nosocomial infections.

For further information, contact:

Rapid Viral Diagnosis Program Officer
Clinical Studies Branch
National Institute of Allergy and Infectious Diseases
Building 31, Room 7A51
Bethesda, MD 20205
(301) 496-5893

Influenza - Influenza is the most important respiratory disease of man that periodically produces epidemics and pandemics. Thus, the effects of influenza have an extraordinary impact on the population, both in terms of mortality and morbidity. Research is supported on the pathogenesis of influenzal disease, on the complex epidemiology of this infection in man and animals, and on the knowledge of influenza virus genetics, structure, and replication. This basic information undergirds studies targeted at the prevention or therapy of influenza, including work on antivirals and on inactivated and attenuated vaccines.

For further information, contact:

Influenza Program Officer
Development and Application Branch
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 750
Bethesda, MD 20205
(301) 496-7051

Viral Diarrhea - Research focuses on the identifiction and cultivation of the etiological agents of viral diarrhea, particularly the 70 nm rotavirus and a 27 nm particle referred to as the Norwalk Agent. A number of parvo- and coronaviruses have been associated with diarrheas in a wide variety of animals. Since rotavirus vaccines have proven to be of value in animal diarrheas, there is hope that such vaccines will also be effective in man. There is a lack of information on the pathogenesis and mechanisms of the host response in viral diarrhea, particularly in children. At present, methods of treatment are largely symptomatic; studies of the electrolyte losses in viral diarrheas would enable specific fluid therapy to be developed. Research is also needed on the relationships of various host factors to the cause and severity of diarrheal illness.

For further information, contact:

Enteric Diseases Program Officer
Development and Application Branch
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 750
Bethesda, MD 20205
(301) 496-7051

Antiviral Substances - The Antiviral Substances Program supports research directed toward the development of drugs for the treatment and prevention of viral diseases in man. Particular emphasis is on the diseases of major public health importance, such as influenza, herpes, hepatitis, and rabies. Studies devoted to a better understanding of viral replication and inhibition are encouraged. A basic part of the Program is the maintenance of animal model systems for testing new antivirals that show clinical promise. Once an antiviral has shown efficacy and has been found to have little or no toxicity, clinical trials may be initiated. Current trials include the use of exogenous interferon or such new antiviral compounds as adenine arabinoside monophosphate and 9-(2-hydroxyethoxymethyl) for the treatment of herpes infections. The use of combination therapy to treat hepatitis B in carefully controlled trials is projected.

For more information, contact:

Antiviral Substances Program Officer
Development and Applications Branch
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 750
Bethesda, MD 20205
(301) 496-7051

Viral Vaccines - In addition to the specific viral disease programs identified above, NIAID also supports and encourages research directed to the control of other viral diseases of man. For example, viral respiratory diseases other than influenza--primarily respiratory syncytial virus and parainfluenza viruses--are major health problems in pediatric populations. Efforts are being made to understand the natural history of the viral diseases and to evaluate the impact that live attenuated vaccines have in preventing morbidity and mortality from infection by viruses. Similarly, herpes varicella vaccines are being tested for safety and antigenicity in humans.

For further information, contact:

Chief, Development and Applications Branch
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 750
Bethesda, MD 20205
(301) 496-7051

Parasitology

The Institute encourages a variety of research projects to obtain a clearer understanding of host-parasite and vector-parasite relationships, with the ultimate goal of applying this basic information to the control of parasitic diseases through such procedures as chemoprophylaxis, chemotherapy, and vector control. Research projects cover the entire field of parasitology and medical entomology, and bring to bear a broad spectrum of multidisciplinary approaches. Emphasis has been directed toward studies on the immunology of parasitic infections and the biological regulation of vectors, with special attention to infectious diseases of developing countries, particularly those diseases targeted by the World Health Organization's Special Program for Research and Training in Tropical Diseases (malaria, filariasis, leishmaniasis, schistosomiasis, and trypanosomiasis). As a means of stimulating and undergirding research on schistosomiasis and filariasis, NIAID also supports two contracts to provide investigators with animals and vectors infected with various species of both these parasities.

For further information, contact:

Parasitology and Medical Entomology Program Officer
Molecular Microbiology and Parasitology Branch
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 737
Bethesda, MD 20205
(301) 496-7114

International Health

International Collaboration in Infectious Diseases Research (ICIDR) - The research emphasis of this new program is infectious diseases and the immunology of these diseases in the developing countries of the world. Special attention is given to the six diseases of the World Health Organization Special Program for Research and Training in Tropical Diseases.

The program is divided into Parts A and B. Part A, the International Program Project Grants, embraces broadly based multidisciplinary research programs that have a well-defined central focus or objective. Major portions of the research undertaken in Part A are conducted overseas with an acceptable foreign affiliate. The grant period is for 5 years, after which the program will again be announced to the scientific community for open competition. Part B, the International Exploratory/Developmental Research Grant, encourages the individual investigator to develop a biomedical research program with an overseas affiliate, with most of the work being done in the host country. The grant period is for 3 to 5 years, after which time the investigator is expected to compete for a research project grant or for a program project grant.

The contact for the ICIDR program is:

Special Assistant to the Director
Microbiology and Infectious Diseases Program
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 749
Bethesda, MD 20205
(301) 496-7065

The U.S.- Japan Cooperative Medical Science Program - The U.S.-Japan Cooperative Medical Science Program resulted from a bilateral agreement made in 1965. The purpose of this program is to improve the health of the people of Asia through intensive research efforts by American and Japanese scientists on diseases of major health importance to the area. Included are cholera and cholera-like diseases, leprosy, tuberculosis, parasitic diseases (filariasis and schistosomiasis), and viral diseases (gastroenteritis, rabies, and dengue). These five infectious disease areas are supported through grants and contracts funded by the MIDP. For the appropriate contact, refer to the Program Officer administering the specific disease areas. In addition to infectious diseases, malnutrition, environmental mutagenesis, and carcinogenesis are supported by NIAMDD and NIEHS.

The contact for the nutrition program is:

Nutrition Program Director
Digestive Diseases and Nutrition Program
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 606
Bethesda, MD 20205
(301) 496-7823

Information for the environmental mutagenesis and carcinogenesis program can be obtained from:

Associate Director for Genetics
National Institute of Environmental Health Sciences
P.O. Box 12233
Research Triangle Park, NC 27709
(919) 629-3492

Questions concerning the organizational structure of this bilateral program may be directed to:

Special Assistant to the Director, MIDP
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 749
Bethesda, MD 20205
(301) 496-7065

U.S.-U.S.S.R. Cooperative Program on Influenza - The NIAID together with the Bureau of Biologics, FDA, and the Center for Disease Control participates in an active cooperative program with the Soviet Union on influenza. Including studies on etiology, immunoprophylaxis, epidemiology, chemoprophylaxis and therapy, and the biology of influenza virus, this program serves as a means of information exchange that has resulted in useful scientific communication between the two countries.

For further information, contact:

Chief, Development and Applications Branch
National Institute of Allergy and Infectious Diseases
Westwood Building, Room 750
Bethesda, MD 20205
(301) 496-7051

National Institute of Allergy and Infectious Diseases

Immunology, Allergic & Imunol. Dis.	Project Grants	Program Project Grants	Center Grants	Research Career Development Awards	Allergic Diseases Academic Awards	National Research Service Awards	Research and Development Contracts
Immunobiol. & Immunochemistry	■	■		■		■	■
Genetics & Transplant. Biol.	■			■		■	■
Asthma & Allergic Diseases	■	■	■	■	■	■	■
Immunological Diseases	■	■	■	■		■	
Research Resources and Reagents							■
Microbiology & Infectious Diseases							
Molecular Microbiology (Biochemistry, Physiol., Genetics, Recombinant DNA)	■			■		■	■
Bacteriology and Mycology							
General Bacteriology and Special Problems	■	■		■		■	■
Mycobacteriology	■			■		■	■
Mycology	■	■		■		■	
Bacterial Diarrhea	■			■		■	■
Bacterial Vaccines	■						■
Clinical Trials with Antimicrobials	■					■	■

(Continued)

Virology	Project Grants	Program Project Grants	Center Grants	Research Career Development Awards	Allergic Diseases Academic Awards	National Research Service Awards	Research and Development Contracts
General Virology	■			■		■	■
Viral Hepatitis	■			■		■	■
Rapid Viral Diagnosis	■			■		■	■
Influenza	■			■		■	■
Viral Diarrhea	■						■
Antiviral Substances	■			■		■	■
Viral Vaccines	■						■
Parasitology	■			■		■	■
International Health							
International Collaboration in Infectious Diseases Research	■	■					
U.S. Japan Coop. Med. Sci. Prog.	■						■

National Institute of Arthritis, Metabolism, and Digestive Diseases

MISSION

The National Institute of Arthritis, Metabolism, and Digestive Diseases (NIAMDD) conducts and supports research focused on a number of diseases that are characterized by chronicity and long-term disabling effects rather than mortality. Areas of interest include:

- various arthritic diseases and related rheumatic and connective tissue disorders;
- diabetes and other inherited errors of metabolism, including cystic fibrosis;
- diseases of the gastrointestinal tract, including diseases of the liver and gallbladder;
- endocrine disorders;
- diseases of the blood and bone; and
- urological and kidney diseases.

The Institute also conducts and supports related research in orthopedic surgery, dermatology, nutrition in health, and nutrition-related disorders. NIAMDD responsibilities encompass investigations of the etiology, pathogenesis, diagnosis, and treatment of specific diseases within these areas at whatever period in life they may occur.

The Institute acquires new biomedical information through grant-supported research at institutions across the country, through research at NIAMDD facilities in Bethesda and in Phoenix, Arizona, through various field studies, and through centrally directed collaborative research contracts. NIAMDD's extramural programs support fundamental and clinical research conducted at universities, medical schools, and other research centers throughout the United States and abroad.

GENERAL PROGRAMS

Arthritis, Bone, and Skin Diseases Program

The primary objective of the Arthritis, Bone, and Skin Diseases Program (ABSDP) is development of measures for prevention, treatment, and therapy of these diseases. To reach this objective, ABSDP supports clinical studies on people with disease, studies on all aspects of the development of disease, and studies on basic biological processes, as well as the effective application and dissemination of available knowledge.

Support is provided through research project grants, program project grants, center grants, Research Career Development Awards, Clinical Investigator Awards, and National Research Service Awards for individual fellowships and institutional training grants. A small number of research and development contracts are awarded.

Arthritis Program

Areas of research in the Arthritis Program include the following aspects of rheumatic diseases: immunological factors; inflammation; infectious agents; genetic factors; structure and function of cartilage and connective tissue; arthritis in children; systemic lupus erythematosus; rheumatoid arthritis; osteoarthritis; spondylitis and related syndromes; other diffuse and connective tissue diseases; gout and pseudogout; and epidemiology of rheumatic diseases.

The Arthritis Program supports research project grants, program project grants, research training through National Research Service Awards (both individual fellowships and institutional awards), Clinical Investigator Awards, and Research Career Development Awards.

For further information, contact:

Arthritis Program Director, Extramural Programs
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 405
Bethesda, MD 20205, (301) 496-7326

Bone Diseases Programs

The research objectives of the Bone Diseases Programs include emphasis on the following aspects of musculoskeletal disorders: bone structure, formation, degradation, and repair; interaction of bone with hormones, vitamins, fluorides, and other biological agents; osteoporosis and other metabolic disorders; biomaterials, biomechanics, and joint replacement; inherited connective tissue diseases, including osteogenesis imperfecta, Marfan's syndrome, mucopolysaccharidoses, and others; developmental disorders such as scoliosis; studies of tendons, ligaments, cartilage, and skeletal muscle in relationship to bones and joints; and bone immunology and transplantation.

The Bone Diseases Programs support research project grants, program project grants, research training through National Research Service Awards (both individual fellowships and institutional awards), Clinical Investigator Awards, and Research Career Development Awards.

For further information, contact:

Musculoskeletal Diseases Program Director
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 405
Bethesda, MD 20205, (301) 496-7326

Skin Diseases Programs

The Skin Diseases Programs are directed toward the following aspects of dermatology: metabolic studies of epidermis, dermis, and subcutaneous fat, including effects of hormones and interaction with enzymes, substrates, minerals, and trace elements; comparative structure and function of skin in man and other primates; immunologically mediated cutaneous disorders, including atopic dermatitis, eczema, contact dermatitis, and vasculitis; photobiology, photoallergy, and phototoxic reactions; vitiligo; kinetics of keratinizing tissues; psoriasis; bullous diseases of skin including pemphigus, pemphigoid, and dermatitis herpetiformis; and acne.

Funds in the Skin Diseases Program are provided through research project grants, program project grants, research training through National Research Service Awards (both individual fellowships and institutional awards), Clinical Investigator Awards, and Research Career Development Awards.

For further information, contact:

Dermatology Program Director, Extramural Programs
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 405
Bethesda, MD 20205, (301) 496-7326

Arthritis Centers Program

The Arthritis Centers Program supports multipurpose Arthritis Centers, which are either a single institution or a consortium of cooperating institutions. Each center conducts: basic and clinical research into the causes, diagnosis, early detection, control, and treatment of arthritis and complications resulting from arthritis; training programs for physicians and other health and allied professionals in current methods of diagnosis, screening and early detection, control, and treatment of arthritis; information and continuing education programs for physicians and other allied health professionals who provide care for patients with arthritis; and programs for the dissemination of information to the general public. Support for this program is by Comprehensive Center Grant awards.

For further information, contact:

Arthritis Centers Program Director
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 405
Bethesda, MD 20205, (301) 496-7495

Diabetes, Endocrinology and Metabolic Diseases

Diabetes Programs Branch

In addition to coordinating the activities of the various diabetes programs, this office serves as the administrative focus for extramural grant and contract support of special diabetes research initiatives related to islet cell transplantation, insulin delivery systems and glucose sensors, behavioral research, and epidemiologic studies.

Diabetes Research Program - The Diabetes Research Program provides grant support for a wide range of fundamental and clinical studies related to the etiology, pathogenesis, prevention, diagnosis, treatment, and cure of diabetes mellitus and its complications. Specific areas of research include: the structure, function, biosynthesis, secretion and mechanisms of action of pancreatic hormones and related peptides and enzymes; carbohydrate, lipid, and protein metabolism; and diabetic nutritional interrelationships including obesity. Other opportunities for research are the following: studies of the genetic nature of diabetes; identification of specific markers which characterize individuals predisposed to diabetes; studies of immunological and infectious factors as they relate to diabetes; and work related to nutrition and metabolic regulation in the diabetic. Research is also requested to determine the impact that hormone secretion and synthesis has on the pathobiology of diabetes mellitus and its sequelae.

Diabetes Centers Program - The Diabetes Centers Program administers two types of center awards: the Diabetes-Endocrinology Research Centers Program (DERC) and the Diabetes Research and Training Centers Program (DRTC). The DERC is exclusively oriented toward biomedical research goals, while the DRTC includes training and information transfer components in addition to biomedical research. Both types of center grants provide a mechanism for integrating, coordinating, and fostering the interdisciplinary cooperation of a group of established investigators conducting programs of active, high-quality research in diabetes and related endocrine and metabolic disorders.

Clinical Applications Program - The Clinical Applications Program is responsible for the administration of clinical trials to evaluate the efficacy and safety of therapeutic modalities in the categorical diseases for which the DEMD Cluster has primary responsibility. These studies are designed to develop the information needed to ensure not only that patients receive the most effective treatment, but also that treatment is begun immediately after it has been warranted by evidence accumulated from clinical research. At the present time, a collaborative clinical trial is being planned to determine the relationship between strict control of blood glucose in insulin-dependent diabetics and the development of vascular complications.

National Diabetes Data Group - The National Diabetes Data Group (NDDG) serves as the major Federal focus for the collection, analysis, and dissemination of data on diabetes and its complications. Drawing upon the expertise of the research, medical, and lay communities, the Data Group is initiating efforts: to define the data needed to address the scientific and public health issues in diabetes; to foster and coordinate the collection of these data from multiple sources; to promote the timely availability of reliable data to pertinent professional and public organizations; to modify data reporting systems to identify and categorize the medical and socioeconomic impact of diabetes; and to promote the standardization of data collection and terminology in basic, clinical, and epidemiologic research. In addition, NDDG staff are working closely with members of the scientific community to stimulate development of new investigator-initiated research programs in diabetes epidemiology.

National Diabetes Information Clearinghouse - The National Diabetes Information Clearinghouse functions as the central point for the collection and dissemination of information about education materials, programs, and resources relevant to diabetes control and education. The Clearinghouse serves Diabetes Research and Training Centers, local and national diabetes organizations, professional groups, state departments of health, and other Federal and state agencies. Since the Clearinghouse is a source of information rather than an actual repository of documents, the user groups provide the available information to their respective audiences. The overall goal of the Clearinghouse is to function as a catalyst in assisting and enhancing the efforts of these various groups in the development and exchange of education materials and diabetes information. In addition, Clearinghouse staff are also actively involved in stimulating the development of new investigator-initiated research programs related to the behavioral and psychosocial aspects of diabetes.

The Diabetes Program Branch provides financial support through the following types of awards: investigator-initiated research grants for basic and clinical biomedical, behavioral, and epidemiological research; program projects; National Research Service Awards (both individual fellowships and institutional awards); Research Career Development Awards; and Clinical Investigator Awards. Special Emphasis Research Career Awards provide salary support as well as limited research expenses to clinicians interested in developing research skills in either cardiovascular or obstetrical, perinatal, and/or pediatric aspects of diabetes. These awards are funded jointly with the NHLBI or the NICHD. The New Investigator Research Award is intended to provide support for the initial independent research effort of an investigator.

Further information relating to the programs in Diabetes, Endocrinology and Metabolic Diseases can be obtained by contacting:

Chief, Diabetes Programs Branch
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 626
Bethesda, MD 20205
(301) 496-7348

Diabetes Research Program Director
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 628
Bethesda, MD 20205
(301) 496-7731

Diabetes Centers Program Director
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 622
Bethesda, MD 20205
(301) 496-7418

Clinical Applications Program Director
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 603
Bethesda, MD 20205
(301) 496-7888

Program Director, National Diabetes Data Group
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 620
Bethesda, MD 20205
(301) 496-7595

Program Director, National Diabetes Information Clearinghouse
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 605
Bethesda, MD 20205
(301) 496-7433

Program Director, Resources and Manpower Development
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 403
Bethesda, MD 20205
(301) 496-7851

Endocrinology, Metabolic Diseases, and Resources Program Branch

In addition to coordinating the activities of the Institute's endocrinology, metabolic diseases, and resources development programs, this office serves as the focus for administration of the NIAMDD cystic fibrosis-related activities. The program provides support for projects related to understanding the metabolic bases as well as the nutritional and metabolic manifestations of cystic fibrosis.

Endocrinology Research Program - The Endocrinology Program supports basic and clinical studies of the normal and abnormal function of the pituitary, thyroid, parathyroid, adrenal, pineal, and thymus glands. The Program encourages research in the mode of action of hormones, their biosynthesis, secretion, and metabolism, as well as their binding to protein carriers, subsequent release, and the kinetics of binding. A substantial portion of the Program is also devoted to structure and function studies of the hypothalamic releasing factors as they affect endocrine function. Studies of somatostatin and its effect on other hormones are supported, as well as research on substances with hormone-like action, such as prostaglandins and the brain peptides. The Hormone Distribution Program is an important research resource provided to the scientific community by the Endocrinology Program through its support of the National Pituitary Agency. The Agency distributes hormones and their antisera to qualified investigators, thus providing standardized products for endocrinology research.

Metabolic Diseases Research Program - Enzymatic mechanisms are a vital link in understanding the etiology and pathogenesis of acquired or inborn errors of metabolism. Therefore, this program provides support for investigator-initiated research into enzymatic mechanisms and their regulation, biological transport, and membrane structure. Aminoacidopathies, hyperuricemias, organic acidurias, glycogenosis, mucopolysaccharidoses, and Fabry's and Gaucher's diseases constitute some research areas of major programmatic interest. Areas of emphasis also include development of diagnostic techniques, purification and production of enzymes required for replacement therapy, and chemical and allosteric modification of isozymes and defective enzymes involved in these diseases. In addition, the program supports research in normal and abnormal carbohydrate, fat, aminoacid, pyrimidine, and purine metabolism; synthesis and biosynthesis of chemicals and proteins; and studies of protein structure as they pertain to the elucidation of pathometabolic processes.

Resources and Manpower Development Program - This program supports training and career development in the full range of research areas spanned by the Diabetes, Endocrinology and Metabolic Diseases Program, as well as the development of research resources for all areas except those covered by the National Pituitary Agency. Such support includes: the development, characterization, and availability for investigators of animal models of diabetes mellitus, cystic fibrosis, and a variety of other endocrinologic and metabolic diseases; in some cases, the maintenance and distribution of these animal models; and the development and distribution to investigators of various insulins and insulin analogs.

The Endocrinology, Metabolic Diseases, and Resources Programs Branch provides funds for the following awards: investigator-initiated research grants for basic and clinical biomedical and epidemiological research, program project grants, National Research Service Awards (both individual fellowships and institutional awards), Research Career Development Awards, and Clinical Investigator Awards.

For further information, contact:

Chief, Endocrinology, Metabolic Diseases, and Resources Programs Branch
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 622
Bethesda, MD 20205
(301) 496-7645

Endocrinology Research Program Director
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 620
Bethesda, MD 20205
(301) 496-7504

Metabolic Diseases Research Program Director
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 603
Bethesda, MD 20205
(301) 496-7997

Resources and Manpower Development Program Director
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 626B
Bethesda, MD 20205
(301) 496-7851

Digestive Diseases and Nutrition Cluster

Digestive Diseases Program

The Digestive Diseases Program is responsible for the extramural support of grant awards and contracts pertaining to certain organ systems of the gastrointestinal tract. Research in this area centers on disorders of the esophagus, stomach, and small and large intestines. Major digestive diseases which are studied include esophagitis, peptic ulcer, diverticulitis, infectious diarrhea, ileitis, ulcerative colitis, and malabsorption. Further research is encouraged in the known causes of these digestive diseases, including infections, metabolic disorders, genetic defects, neuromuscular disorders, toxins, and reactions to life stress.

Special ongoing activities being supported include: Crohn's Disease, including the relative therapeutic effectiveness of steroids, sulfasalazine, and placebo; endoscopy studies on the therapeutic application of endoscopy to gastrointestinal hemorrhage; purified gastrointestinal hormones provided for investigators; and Gastroenterology Abstracts and Citations, 10-12 issues per year prepared and published by NIAMDD.

The types of awards available are research grants, program project grants, National Research Service Awards (individual postdoctoral fellowships and institutional training grants), Career Development Awards, and Clinical Investigator Awards. Clinical trials are supported by the Digestive Diseases Program.

For further information, contact:

Program Director for Digestive Diseases
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 604
Bethesda, MD 20205
(301) 496-7821

Liver Diseases Program

The Liver Diseases Program supports research on the fundamental aspects of the physiology and biochemical processes associated with the normal and diseased liver, including disease states such as biliary atresia, bilirubinemia, hepatitis and cirrhosis, and hepatic coma. Related research in the area includes: basic studies on factors initiating and maintaining hepatic regeneration; biochemical and immunologic mechanisms responsible for the persistence of liver diseases; factors leading to liver cell injury, fibrosis and death; metabolic disorders of the liver; and basic and applied studies on organ transplantation, including techniques of preservation and storage.

One special ongoing activity is the National Cooperative Gallstone Study. This study, conducted as a multicenter clinical trial, is designed to determine the effectiveness and safety of chenodeoxycholic acid in the dissolution of radioluscent gallstones at two dose levels compared with placebo. After the termination of the two year therapeutic regimen, an additional study was initiated using the group in which gallstones have dissolved to determine the long-term requirements for chenodeoxycholic acid and prevent stone recurrence.

Types of awards available in the Liver Diseases Program include: research grants, program project grants, National Research Service Awards (individual postdoctoral fellowships and institutional training grants), Research Career Development Awards, Clinical Investigator Awards, and the Liver Centers Program.

For further information, contact:

Program Director for Liver Diseases
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 604
Bethesda, MD 20205
(301) 496-7821

Biliary Tract and Pancreatic Diseases Program

This program, which originated in January 1979, is an offspring of the Liver Diseases Program. Research is concerned with bile salt and cholesterol metabolism, the exocrine pancreas, the salivary glands, and the diseases related to the biliary tract, pancreas, and salivary glands.

Research grants, program project grants, National Research Service Awards (individual postdoctoral fellowships and institutional training grants), Research Career Development Awards, and Clinical Investigator Awards are funded under this program.

For further information regarding the Biliary Tract and Pancreatic Diseases Program, contact:

Program Director for Biliary Tract and Pancreatic Diseases
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 549
Bethesda, MD 20205
(301) 496-7135

Nutrition Program

The Nutrition Program supports research, manpower development and training in basic and clinical nutrition. Included are the following areas: the study of human nutritional requirements and the factors that influence these requirements; the use of new technologies in the study of the function of nutrients; research on iron deficiency and metabolic levels and roles of trace minerals; basic studies on dietary fiber, including research on the interaction of nutrition, immune competence and infection; obesity research aimed towards prevention; and studies on supportive nutrition for hospitalized patients through Clinical Nutrition Research Units.

The NIAMDD Nutrition Program also administers the U.S. Malnutrition Panel portion of the U.S. Japan Cooperative Medical Science Program, which supports research in the nutritional health problems of Southeast Asia. The objectives of this program are as follows: to determine the influence of environmental and host factors on nutritional requirements; to identify the health significance of different methods of preventing iron deficiency; to understand the interaction of nutrition, immune competence, and infection; to determine the effects of nutrition on physical and mental development, behavior, physical capability, and work performance; and to identify the health consequences of different dietary patterns and food intake.

Research grants, program project grants, National Research Service Awards (individual postdoctoral fellowships and institutional training grants) core center grants (obesity and clinical nutrition research), Research Career Development Awards, and Clinical Investigator Awards are funded by the Nutrition Program.

For more information, contact:

Nutrition Program Director
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 606
Bethesda, MD 20205
(301) 496-7823

Kidney Disease, Urology, and Hematology Program

The major focus of the Kidney Disease, Urology, and Hematology Program is support for research in the basic mechanisms underlying biologic processes and diseases in the nephrologic, urologic, and hematologic systems. Coordination of interests in these fields is maintained formally and informally with other NIH institutes, with other government agencies, and with scientists in the field. Ongoing evaluation of research is performed, in general, both by the program staff and through consultation with outside experts.

Kidney Disease and Urology Program

In 1963, the NIH decided on an extramural program category for research and research training in nephrology and urology, with NIAMDD given the responsibility for developing and maintaining what emerged as the Urology and Renal Disease Program. The thrust of the program, however, was largely in the direction of basic and clinical research related to end-stage renal disease, and only to a lesser extent included support of research into urological problems. Therefore, in 1972, the program was renamed the Kidney Disease and Urology Program.

The program has experienced rapid growth, and recently the Artificial Kidney/Chronic Uremia Program, a contract program within the NIAMDD, was incorporated into the Kidney Disease and Urology Program. Following this reorganization, three programs were delineated:

(1) The Renal Physiology/Pathophysiology Program primarily supports research on: the structure and function of the kidney, including metabolism, transport, and fluid-electrolyte dynamics; the specific immune mechanisms of kidney disease, including glomerulonephritis, interstitial nephritis, and pyelonephritis; and studies of the effects of drugs and environmental toxins on the kidney, including analgesic "associated" nephropathy.

(2) The Urology (including Urolithiasis) Program supports research relating to diseases of the lower urinary tract, including obstructive disorders, urolithiasis, and neurogenic bladder.

(3) The Chronic Renal Diseases Program supports studies on the pathophysiology of uremia, kidney transplantation, kidney preservation, evaluation of therapies for the treatment of end-stage renal disease patients, and a variety of critical issues related to the maintenance of chronic uremia patients.

The Kidney Disease and Urology Program provides support for investigator-initiated research grants, program projects, Research Career Development Awards, Clinical Investigator Awards and center grants. Specialized Centers of Research (SCORs) in urolithiasis are also funded. The objective in the establishment of the 5 SCORs in FY 1978 was to focus resources, scientific expertise, and facilities upon research into basic mechanisms responsible for urolithiasis and its multiple etiologies. Furthermore, it is anticipated that effective therapies will evolve and that rational methods for the prevention of kidney stone disease can be developed.

For additional information concerning the above programs, contact:

Program Director, Kidney Disease and Urology Program
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 621
Bethesda, MD 20205
(301) 496-7459

Hematology Program

The goal of the NIAMDD Hematology Program is twofold; to support basic laboratory research and clinical investigations extramurally; and to provide postdoctoral, biomedical research training support for individuals interested in careers in health sciences related to this program.

Special interest has been announced in the following areas: the etiology, pathogenesis, and therapeutic modalities (encompassing drugs and environmental toxins) of anemias of chronic renal failure and other chronic diseases; bone marrow transplantation; the involvement of erythropoietin in the activation and regulation of stem cell differentiation; the nutritional, therapeutic or metabolic origins of iron overload and deficiency including iron metabolism, acquisition, transport, and storage; and the structure, metabolism and genetic regulation of hemoglobin.

Other areas of major and continuing program interest include: heme biosynthesis, porphyrins, and the porphyrias; hemoglobin structure, biosynthesis, and genetics; and white blood cell metabolism and function.

Iron Chelation Research and Development Contract Program

The objective of this program is to develop safe, more clinically effective compounds that can remove pathological stores of iron, such as those that result from repeated transfusions given in the treatment of Cooley's anemia. Both chemically synthesized compounds and those isolated from natural sources are of interest. In addition, this program supports testing or screening systems to determine the efficacy and toxicity of the compounds.

For additional information on either the Hematology Program or the Iron Chelation Research and Development Contract Program, contact:

Hematology Program Director
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 621
Bethesda, MD 20205
(301) 496-7458

National Institute of Arthritis, Metabolism, and Digestive Diseases

	Project Grants	Program Project Grants	Specialized Center Grants	Research Career Development Awards	National Research Service Awards	Clinical Investigator Awards	Special Emphasis Awards	New Investigator Awards	Special Cooperative Programs US-Japan/US-Russia	Research and Development Contracts
Arthritis	■	■	■	■	■	■			■	■
Orthopedics	■	■		■	■	■				■
Dermatology	■	■		■	■	■				■
Diabetes	■	■	■	■	■	■	■	■		■
Endocrinology	■	■		■	■	■		■		■
Metabolism	■	■		■	■	■		■		■
Digestive Diseases	■	■	■	■	■	■		■		■
Liver Diseases	■	■	■	■	■	■		■		■
Nutrition	■	■	■	■	■	■		■	■	■
Urology & Renal Diseases	■	■		■	■	■		■		■
Hematology	■	■		■	■	■		■		■

National Cancer Institute

MISSION

The National Cancer Institute (NCI), established under the National Cancer Act of 1937, is the Federal Government's principal agency for cancer research and control. The National Cancer Act of 1971 directed the Institute to "plan and develop an expanded, intensified, and coordinated cancer research program, encompassing the programs of the NCI, related programs of other Research Institutes, and other Federal and non-Federal programs." To speed the translation of research results into widespread applications, the Act authorized a cancer control program to demonstrate and communicate to both the medical community and the general public the latest advances in cancer prevention and management.

The great bulk of NCI funding--more than 65 percent in FY 1980--goes to the extramural scientific community through grant and contract awards. In addition, NCI supports intramural research in its own laboratories, funds projects by other Federal agencies through interagency agreements, and supports and performs administrative functions across the spectrum of the National Cancer Program. Nonprofit institutions, such as universities, hospitals, private research facilities, and State and local governmental organizations, may receive either grants or contracts; profitmaking organizations may receive contracts.

NCI awards grants for cancer-related activities in numerous research fields for laboratory and clinical investigations (either individual grants or program grants), for epidemiological studies and related surveys, for cancer control, for cancer centers, for construction, for conferences, and for training. Grant applications are initiated and prepared by outside scientists and submitted to the Division of Research Grants, NIH. After peer review, usually by initial review groups (IRGs) and the National Cancer Advisory Board, NCI awards grants to the extent of available funds.

NCI awards contracts in research and development and for cancer control projects. Although most NCI contracts are awarded through competition, unsolicited proposals for contracts in cancer research are accepted, reviewed, and possibly awarded if funds permit, if they are deemed of sufficiently high priority, and if there is sufficient justification for noncompetitive procurement.

GENERAL PROGRAMS

The various extramural programs of the National Cancer Institute are categorized into Cancer Research, Cancer Control, and Cancer Resource Development. For each program, a brief description is given as well as the sponsoring division of NCI, the source of further information, and the mechanism of funding. Except for basic tumor biology research, which is supported only by grants, all general areas of research and control can be supported by either contracts or grants. In the field of resource development, grants are the primary funding mechanism, although some conferences and construction have received contract support.

Specific cancer projects may fit into several different programs. When a research grant application is received, the staff assigns it to a specific program. Contract proposals responding to a Request for Proposals (RFP) should be sent to the Research Contracts Branch, NCI, for subsequent transmission to the program that advertised the RFP; unsolicited contract proposals should be sent to a specific program.

Cancer Research

Epidemiology

The Epidemiology Grants Program looks for evidence linking the causation of human cancers to factors such as viral infections, carcinogenic chemicals, radiation exposure, endogenous and exogenous hormones, and genetic predisposition. Research projects include cancer epidemiology, human population genetics, biometry and computer science, and psychological factors relating to cancer.

For further information, contact:

Division of Cancer Cause and Prevention
National Cancer Institute
Bethesda, MD 20205

Field Studies and Statistics

This contract program has three major thrusts: research into the causation of cancer in free-living populations; development of experimental designs for cancer epidemiology studies, with attendant mathematical and statistical support; and development of basic data on cancer incidence, prevalence, and mortality in the United States with enough precision to allow valid measurement of success and failure of prevention, diagnosis, or treatment techniques. The program is setting up a permanent data collection and analysis system to standardize the statistical base for future cancer research.

For further information, contact:

Carcinogenesis Extramural Research Program
Division of Cancer Cause and Prevention
National Cancer Institute
Bethesda, MD 20205

Chemical and Physical Carcinogenesis

Carcinogenesis grants fund research to find effective means of preventing human cancer caused or promoted by chemical or physical agents. Research areas include mechanisms of actions of carcinogens, identification of proximate and ultimate carcinogens, and biochemical changes produced by carcinogens.

The Carcinogenesis Contracts Program conducts coordinated research and development on cancer prevention and on possible chemical and physical factors as causes of cancer. Identification of population groups at risk and determination of possible causes of such high risks, identification by bioassay of carcinogenic activities of selected chemicals, development of suitable animal model systems for bioassays, and charting biochemical steps involved in the process of chemical and physical carcinogenesis are major responsibilities of this program. One facet of the program examines ways to develop less hazardous cigarettes and antismoking drugs.

For further information, contact:

Carcinogenesis Extramural Research Program
Division of Cancer Cause and Prevention
National Cancer Institute
Bethesda, MD 20205

Biological Carcinogenesis

The Biological Carcinogenesis Program supports grants research on the role of viruses and other biological agents in causing cancer as well as related studies on the identification of susceptible individuals, early diagnosis, and development of new modes of prevention and treatment.

The program also awards contracts to determine the significance of viruses and other biologic agents in inducing cancers in man and animals, with the knowledge gained intended ultimately to prevent and control cancers of biologic origin. The program encompasses basic, developmental, and applied research directed toward elucidation of steps leading to oncogenesis and eventual neutralization of the process to prevent cancer from developing.

For further information, contact:

Carcinogenesis Extramural Research Program
Division of Cancer Cause and Prevention
National Cancer Institute
Bethesda, MD 20205

Tumor Biology

The Tumor Biology Program involves a broad spectrum of grants research with normal and malignant animal and human cell systems. The goal is to develop a better understanding of the biological processes in malignant cells that are responsible for uncontrolled growth and invasion of surrounding tissues. Investigative approaches include cell biology, molecular biology, developmental biology, biochemistry, genetics, and pathology.

For further information, contact:

Associate Director for Extramural Research Programs
Division of Cancer Biology and Diagnosis
National Cancer Institute
Bethesda, MD 20205

Tumor Immunology

The Tumor Immunology Program provides grant support for research on the interactions between the host immune system and tumor cells as well as studies on immune mechanisms at a basic level to better understand host responses to tumor cells.

Contract support under this program includes research and development in cancer immunodiagnosis and the immunotherapy of cancer. The program includes both laboratory and clinical studies.

For further information, contact:

Associate Director for Extramural Research Programs
Division of Cancer Biology and Diagnosis
National Cancer Institute
Bethesda, MD 20205

Diagnostic Research

The Diagnostic Research Grant Program supports investigations designed to improve current techniques and to develop new improved techniques for cancer detection and diagnosis.

Research under the Cancer Diagnosis Contracts Program is concerned with the development of screening tests to detect early cancers and the improvement of methods for locating and visualizing the tumor after detection. Avenues under investigation include hormonal and biochemical marker tests, applications of improved cytologic screening methods, automated techniques for reading cytologic specimens, and better radiologic and other physical imaging techniques.

For further information, contact:

Associate Director for Extramural Research Programs
Division of Cancer Biology and Diagnosis
National Cancer Institute
Bethesda, MD 20205

Biochemistry and Pharmacology

The Biochemistry and Pharmacology Grant Program encompasses studies to develop and evaluate possible chemotherapeutic agents for cancer. The five major areas of investigation are: synthesis and isolation of possible anticancer agents, preclinical evaluation of these agents for toxicity and effectiveness, mechanism of drug action, clinical pharmacology, and total drug evaluation in research program projects and clinical centers.

For further information, contact:

Biochemistry and Pharmacology Grants Program Director
Office of Extramural Research and Resources
Division of Cancer Treatment
National Cancer Institute
Bethesda, MD 20205

Cancer Treatment

Clinical Oncology Grants - The Clinical Oncology Program provides grant support for the research necessary for the use and evaluation of the effects of anticancer drugs in the treatment of human cancer. The four specific areas include: studies of toxicity and effectiveness of chemotherapeutic drugs in combination with surgery, radiotherapy or immunotherapy; development studies using animal models and cellular systems; toxicity studies; and studies of cancer-related disorders that might interfere with anticancer drug activity.

Radiation Grants - The Radiation Program is concerned with research in radiation biology and radiation physics to broaden the therapeutic applications of radiation therapy. The program also supports training activities to provide adequate personnel for future clinical and basic research needs. Specialized Clinical Radiation Therapy Centers provide the patient and personnel resources and appropriate facilities needed to evaluate new developments in radiation therapy.

Surgery Grants - This program supports research to improve surgical techniques for the treatment of cancer.

Supportive Care Grants - Studies in supportive care research concern development of methods of long term support for the cancer patient who is subject to potential life-threatening situations caused by the disease or by the cancer treatment. Platelet transfusions for the control of hemorrhage, leucocyte transfusions, and germ-free protective environments, such as laminar air-flow units, for control of infection are examples of patient support systems under investigation.

Clinical Cooperative Grants - Grant support is provided to clinical cooperative groups for the clinical evaluation of new methods of cancer treatment in large numbers of patients. Emphasis had been largely on the study of new cancer drugs, but now includes combinations of chemotherapy with radiation, surgery, and immunotherapy.

For information on the above programs, contact:

Division of Cancer Treatment
National Cancer Institute
Bethesda, MD 20205

Contracts - The ultimate goal of this research and development program is to assure a normal life expectancy for all cancer patients. Shorter term goals are to increase the number of cancer patients responding to therapy with cancer drugs, surgery, radiotherapy, and immunotherapy and to prolong periods of remission of disease through these therapies.

One segment of the program is to identify, develop, and evaluate new anticancer drugs. Activities include acquisition, screening, production, formulation, toxicology, and pharmacology studies of new drugs, as well as clinical studies of their effectiveness.

Another segment is the performance of Phase I and II clinical studies on new drugs and the integration of local and systemic therapy modalities into appropriate treatment strategies for specific forms of cancer. The local modalities of surgery and radiotherapy are therapeutically complementary to the systemic eradication of cancer cells by chemotherapy and possible immunotherapy. Projects are also funded in supportive care, particularly aiming to protect those patients at high risk of infection because of their diseases or the immunosuppresive effects of chemotherapy or radiotherapy.

For further information, contact:

Director, Division of Cancer Treatment
National Cancer Institute
Bethesda, MD 20205

Organ Site Programs

Support is provided for research directed specifically toward several of the common sites of cancer. The work includes epidemiology, causation, experimental biology, detection and diagnosis, and treatment. Specific programs, all supported by grants, include the National Large Bowel Cancer Project, the National Bladder Cancer Project, the National Prostate Cancer Project, and the National Pancreas Cancer Project.

For further information on the above programs, contact:

Division of Cancer Research Resources and Centers
National Cancer Institute
Bethesda, MD 20205

The Breast Cancer Task Force, although technically not one of the National Organ Site Programs, is administered and funded through the NCI Division of Cancer Biology and Diagnosis. The work is supported under both contracts and grants.

For further information, contact:

Associate Director for Extramural Research Programs
Division of Cancer Biology and Diagnosis
National Cancer Institute
Bethesda, MD 20205

Cancer Control

This integrated program of cancer control and rehabilitation activities involves a five-pronged effort stressing identification of new methods and knowledge applicable to control activities, field testing, evaluation, demonstration in the community, and promotion of effective techniques. The program does not support laboratory or clinical research except in the area of rehabilitation, but will support work to improve the application and distribution of existing methods for reducing the incidence, morbidity, and mortality of cancer. Projects are supported through contracts and cancer control grants.

Prevention

The Prevention Program involves activities to identify methods and techniques to educate and persuade the American public to use available information about cancer prevention.

Detection, Diagnosis, and Pretreatment Evaluation

Activities in this program concentrate on promoting more effective communication among physicians, health professionals, and the public about the detection, diagnosis, and pretreatment evaluation of cancer patients, particularly regarding improvements ready for community practice. Support is also given for demonstration screening programs for high-risk members of the community.

Treatment, Rehabilitation, and Continuing Care

This program promotes more effective communication between health professionals and the public about treatment and rehabilitation. It provides practicing physicians with information about newer advances in treatment, the optimum therapy applicable in clinical practice situations, and the indications for referral. In addition support is provided for training of certain categories of health professionals who are in critically short supply, such as nurse oncologists and maxillofacial prosthodontists. The program is also concerned with developing better rehabilitative and continuing care protocols. These protocols are for patient counseling and training designed for the complete rehabilitation of the patient as well as for effective support during terminal disease, including the management of pain.

For further information on the above programs, contact:

Director, Division of Cancer Control and Rehabilitation
National Cancer Institute
Bethesda, MD 20205

Cancer Resource Development

Comprehensive Cancer Centers

Cancer Center grants support Comprehensive Cancer Centers throughout the country, where the whole gamut of the research and control effort is brought into play in a multidisciplinary program ranging from basic research to diagnosis, treatment, rehabilitation, education of personnel, compilation of epidemiologic data, demonstration of proven techniques of cancer care and prevention, and community outreach programs. Comprehensive Cancer Centers are selected after they have proven themselves capable of conforming to the rigorous criteria established by the National Cancer Advisory Board.

Specialized Cancer Centers

Specialized Cancer Centers contain some, but not all, of the capabilities of the Comprehensive Cancer Centers. Some specialized centers that work on basic research have no clinical involvement, whereas others concentrate on patient care related to one or more types of cancer. There are about 17 Specialized Cancer Centers that concentrate on basic research and 34 that focus on one or more areas of clinical investigation.

Conferences Grant funding is available to support cancer research conferences to facilitate communication and coordination of effort among scientists.

For further information on all the above Cancer Resource Development programs, contact:

Division of Cancer Research Resources and Centers
National Cancer Institute
Bethesda, MD 20205

Construction NCI supports construction and renovation of research facilities when necessary for expansion of cancer research programs. These grants can fund up to 50 percent of the total cost, with the remainder to be supplied through non-Federal sources.

For further information, contact:

Research Facilities Branch
Division of Cancer Research Resources and Centers
National Cancer Institute
Bethesda, MD 20205

Clinical Cancer Education These grant awards are designed for a three-fold purpose: to encourage development of educational programs to improve the care of cancer patients; to enable students in the health professions to acquire expertise in cancer diagnosis, care, treatment, and prevention; and to satisfy the need for trained health professionals to deal with cancer. The thrust of the program is to support specialized education in cancer management, not general medical information.

For further information, contact:

Chief, Clinical Manpower Branch
Division of Cancer Research Resources and Centers
National Cancer Institute
Bethesda, MD 20205

National Research Service Awards National Research Service Awards for individual postdoctoral fellows are made to individuals to support specific training proposals selected as a result of national competition. Institutional grants for National Research Service Awards for research training are awarded for up to 5 years to eligible institutions to develop or enhance research training for predoctoral and postdoctoral fellows selected by the institution.

For further information, contact:

Chief, Research Manpower Branch
Division of Cancer Research Resources and Centers
National Cancer Institute
Bethesda, MD 20205

National Cancer Institute

Cancer Research	Project Grants	Program Project Grants	Core Grants	Research Career Development Awards	National Research Service Awards	Construction Grants	Conference Grants	Research and Development Contracts
Epidemiology	■	■		■	■		■	■
Field Studies and Statistics	■	■		■	■		■	■
Chem. and Phys. Carcinogenesis	■	■		■	■		■	■
Biol. Carcinogenesis	■	■		■	■		■	■
Tumor Biology	■	■		■	■		■	■
Tumor Immunology	■	■		■	■		■	■
Diagnostic Research	■	■		■	■		■	■
Biochem. and Pharmacology	■	■		■	■		■	■
Cancer Treatment	■	■		■	■		■	■
Organ Site Programs	■							
Cancer Control								
Prevention	■						■	■
Detection, Diagnosis and Pretreatment Evaluation	■						■	■
Treatment, Rehabilitation and Continuing Care	■						■	■
Cancer Resource Development								
Comprehensive Cancer Centers			■					
Specialized Cancer Centers			■					
Construction						■		
Clinical Cancer Education	■							

National Institute of Child Health and Human Development

MISSION

The National Institute of Child Health and Human Development (NICHD) conducts and supports research and research training on biological and behavioral human development. Primary program areas correspond to a cluster of problems: reproduction and population studies, perinatal biology and infant mortality, developmental biology and nutrition, human learning and behavior, and mental retardation. Within these areas, the Institute recognizes certain goals as preeminent:

- assuring the birth of healthy babies through investigations on nutrition, normal and abnormal fetal development, and problems of pregnancy;
- assuring the birth of wanted babies through studies on human fertility and infertility, contraceptive development and safety, and the reduction of unwanted pregnancies, particularly among adolescents; and
- providing all children the opportunity for productive and healthful adulthood through research to prevent problems in childhood, such as smoking, obesity, environmentally-induced mental retardation, and learning disorders that contribute to adult disease and disability.

GENERAL PROGRAMS

Center for Population Research

The Center for Population Research, which is organized into four branches, carries out the primary Federal effort in population studies through support of research and research training in the biomedical, behavioral, and social sciences. Support is provided through grants and contracts.

In the biomedical sciences, the Center's work is aimed at fundamental research on reproductive biology of both the male and female. This research is designed to yield information necessary to the development of an array of contraceptive methods that are safe, effective, inexpensive, reversible, and acceptable to various population groups. Another component of the Center's mission is to evaluate the safety and effectiveness of contraceptive methods currently in use.

In the behavioral and social sciences, the Center's objectives are to ascertain the social, psychological, and economic determinants of fertility; to increase the understanding of the social, economic, and environmental consequences of changes in population size and distribution; and to identify and define the consequences of the conditions that precipitate migration.

Reproductive Sciences Branch

The Reproductive Sciences Branch supports research on all biological aspects of animal and human reproduction. Its objective is to understand reproduction at its most fundamental level in both the male and female. Studies are supported on fertility and infertility, reproductive endocrinology and its control, egg and sperm development and transport, fertilization, implantation, the relationship between nutrition and reproduction, mechanisms of hormone action, and reproductive diseases.

Fertility and Infertility - The NICHD supports research aimed at alleviating human infertility through investigations of gamete transport, reproductive hormone blood levels, and secretory patterns in infertile men and women. Efforts are directed toward development new compounds to stimulate ovulation and sperm production.

Research on implantation includes studies on blastocyst survival and function, gamete transport in human reproductive tracts, and relevant model systems. Research in the areas of ovum implantation and placentation in women and model systems in other species is also encouraged.

NICHD also supports studies aimed at understanding fertilization of mammalian ova, including human gametogenesis and gamete development, maturation, and capacitation and structure-function relationships of reproductive tissues, organs, and organ systems of mammals.

Mechanism of Reproductive Hormone Action - Research to learn precisely how reproductive hormones exert their effects in target cells of the body is emphasized. Of particular interest is the way the reproductive steroid hormones, including estrogen, progesterone, and androgen, exert their effects on gene regulation. The mechanisms by which gonadotropins and other protein hormones bind to the membranes of their target cells and subsequently elicit the synthesis of reproductive steroid hormones and other cell functions are the focus of intensive study.

NICHD supports research on the biosynthesis, secretion, and metabolism of peptide and steroid hormones of human reproduction, with studies relating to luteinizing hormone-releasing factor (LRF) chemistry, synthesis, biological action, and clinical application of special interest.

Diseases and Disorders of the Human Reproductive System - Studies are encouraged on the effects of genital infections on reproductive processes. Other reproductive diseases in humans and relevant animals are studied with reference specifically to problems of infertility. Also supported are studies in reproductive genetics and cytogenetics in humans and relevant organisms, including research on environmental influences on human reproduction.

Nutrition and Reproduction - Support is provided for studies on the role of nutrition in abnormalities of the menstrual cycle, the initiation of puberty, and the onset of menopause. A research priority is the mother's nutrition during pregnancy, including the critical time between ovulation and implantation of the fertilized ova, and its effect upon the mental and physical development of the embryo, fetus, and child.

Contraceptive Development Branch

The Contraceptive Development Branch is assigned the responsibility of encouraging research to develop new, improved methods of fertility regulation. This includes studies on new drugs and devices, better drug delivery systems, improved methods for predicting and detecting ovulation, and elucidation of the biochemistry of fertilization.

Contraceptive Methods - The Branch's primary goal is to develop new potential contraceptive drugs and devices. This involves studying the synthesis and biological evaluation of novel steroids, prostaglandin analogs, LRF analogs, and other nonsteroids to determine the extent and nature of their possible antifertility activity. Also included are studies of hormones involved in reproduction and methods of measuring them. Studies to elucidate the hormonal control of spermatogenesis are encouraged.

Other areas of research emphasis include: natural family planning, through clinical trials designed to evaluate the efficacy of periodic abstinence methods, and studies on the biochemistry and rheology of cervical mucus designed to better define and detect the fertile period; research to develop improved barrier methods of contraception; and studies to develop new or improved methods for permanent and reversible sterilization.

Safety and Efficacy Evaluation - Clinical trials designed to evaluate new drugs and devices for both men and women are supported. These clinical trials include studies to evaluate the safety and efficacy of androgenic steroids for suppression of spermatogenesis, as well as the safety and efficacy of estrogens administered postcoitally. Clinical toxicological studies on long-acting progestin also are supported.

Drug Delivery Systems - An area of interest is the development of systems and materials for continuous, uninterrupted administration of antifertility drugs aimed at improving the safety and efficacy of presently available drugs. Priorities include the evaluation of biological evidence which concerns the slow and constant release of contraceptive drugs and the development of improved oral formulations for natural and synthetic steroids.

Contraceptive Evaluation Branch

The objective of the Contraceptive Evaluation Branch is to encourage research on the safety and efficacy of current contraceptive methods over short as well as extended periods of time.

Safety of Current Fertility Regulation Methods - Among the hazards or suspected health risks of steroid contraceptives under investigation are cancer and other forms of tumors, heart disease, hypertension, thromboembolic disease, metabolic and nutritional disorders, and birth defects. Specific research goals include determining the effect of oral contraceptive use on the risk of cancer of the breast, endometrium, and ovary, malignant melanoma, and pituitary adenoma; cardiovascular disease, including acute myocardial infarction and hypertension; and diabetes mellitus. Identification of new and as yet unsuspected health hazards and the underlying mechanisms by which known complications arise are also being studied.

Research is in progress to determine the relative risk of known and hypothesized complications associated with specific intrauterine devices which are currently in use in this country. Of special interest is the possible risk of infertility associated with IUDs and the possible association between ectopic pregnancies and IUD use.

The long term health effects of vasectomy in men and tubal ligation in women are under study. In men, the immunological consequences of vasectomy and the possible relationship between vasectomy and an increased risk of atherosclerosis are being studied. Studies are planned on the long term risks of tubal ligation, particularly with regard to severe bleeding. NICHD supports studies to determine the current success of surgery to reverse vasectomy and tubal ligation. Of specific interest is the reason for low fertility in men after vasectomy reversal even when sperm counts appear adequate.

Research is in progress or supported to determine whether induced abortion affects the outcome of subsequent pregnancies, and whether women who have undergone induced abortion are at greater risk for spontaneous abortion, premature or postmature birth.

Circumstances That Increase Risk - NICHD supports studies that delineate circumstances that increase the risks associated with specific, currently used methods of contraception. Such factors as diet, smoking habits, age, and past medical history may affect the risk associated with specific fertility regulation methods. Other program goals are to determine whether oral contraceptives are asociated with an increased risk of cancer of the breast, reproductive organs, or other sites and to develop research in contraceptive safety issues which are peculiar to teenagers.

Underlying Mechanisms - Studies to clarify the mechanisms by which specific adverse effects arise from the use of contraceptives are encouraged. The development of an understanding of the mechanisms which underlie the occurrence of various known serious complications associated with contraceptive steroids is emphasized.

Social and Behavioral Sciences Branch

The Branch supports population research in the social and behavioral sciences on specific aspects of the relationships between population and social, economic, and psychological variables. Particular emphasis is placed on the causes and consequences of fertility and patterns of migration.

Social, Economic, and Environmental Determinants - NICHD is particularly interested in social, economic, and environmental determinants and consequences of population growth and change. Changes in the structure and functions of the family, including trends in household formation, marriage, divorce, fertility, and migration will be studied. This area includes research on the status and roles of women in relation to fertility as affected by female employment, education, sex-role identities, alternative roles, and the socialization and developmental processes within families. Of special interest is the effect of these factors on contraceptive use and family planning.

Social, Economic, and Psychological Consequences - NICHD supports research on the social, economic, and psychological consequences on both men and women of the aforementioned factors as well as studies of interrelations between family structure, sexual behavior, fertility, illegitimacy, teenage pregnancy, and abortion. Motivations and decisions which determine a couple's number and spacing of children, their attitudes toward methods of fertility control, and use-effectiveness of various methods of contraception among subgroups of the population are also of interest.

Migration - Support is given to studies to determine trends, determinants, and consequences of internal population distribution and migration. Research in international migration affecting the United States is also encouraged. Human population density and crowding as factors in population change are studied, as are general trends, antecedents, and consequences of population composition and structure in the U.S. Population modeling research to project or predict population change in the U.S. and policies aimed at regulating population or policies which directly or indirectly affect population growth or distribution are encouraged.

Research to evaluate the impact on population of past and present policies--including family allowances, direct incentives, family planning programs and others--is supported.

For additional information, contact:

Director, Center for Population Research
National Institute of Child Health and Human Development
Landow Building, Room 7A21
Bethesda, MD 20205

Center for Research for Mothers and Children

The Center for Research for Mothers and Children supports research and research training in biomedical, social, and behavioral sciences to improve the health and well-being of mothers, children, and families. The Center has three major Branches.

Clinical Nutrition and Early Development Branch

Genetics and Teratology - This area includes research on the contributions made by genetic factors and environmental conditions during specific time-linked developmental periods to the development of congenital malformations. Antecedents to normal and abnormal development in the mammalian embryo and the role of pharmacologic agents at the molecular, cellular, and organ levels are of special interest.

Studies of cellular differentiation in this area are concerned with mechanisms that control the flow of genetic information to increase understanding of specific regulatory and structural proteins that appear during development. Avain and mammalian models may be used. Included are studies of cell migration and differentiation, cell proliferation and death, and cellular interactions and pattern formation during normal and abnormal development.

Research on developmental human genetics focuses on gene organization, regulation of gene action during development, gene control of the orderly growth and development of an organism, mechanisms underlying normal mammalian differentiation, and the developmental basis for genetic defects or diseases and malignancy. New and improved methods for antenatal diagnosis and fetal therapy are of interest.

Support is given to research on: the immunologic mechanisms essential to successful transition of the fetus from the uterine environment to extrauterine life and the challenges of infectious agents and foreign proteins; immunologic development in infancy and later childhood; and the phylogeny and ontogeny of immuno-competent cells. The objective of such research is to understand host defenses at specific times during development and the causes of human immunologic deficiency in combatting infections and disease. Special emphasis is given to the study of immunologic properties of breast milk and its potential protective role as a defense against infections in the newborn.

Pregnancy and Perinatology - The objective of research on pregnancy and perinatology is to obtain knowledge related to pregnancy and maternal health, embryonic development, fetal growth, and infant well-being. Efforts are directed toward reducing infant mortality, ameliorating infant morbidity, and speeding the incorporation of new knowledge into the delivery of health care.

Research on high-risk pregnancy is concerned with those normal and abnormal physiologic factors that influence the gravid state during antepartum, intrapartum, and puerperium periods. Information is sought on maternal physiology, the complications of pregnancy, the initiation of labor, the impact of common pollutants, the effect of drugs and anesthetics on the mother and on intrauterine conditions, and the psychosocial dynamics of pregnancy. Research is encouraged on the biological and behavioral antecedents of low birth weight. Studies on the influences of maternal and environmental conditions, on adaptation to the extrauterine environment, and on the maintenance of homeostasis are desired. Problems associated with adolescent pregnancy, including all aspects of maternal and infant biological events and complications, are of particular interest.

Emphasis is also given to studies of physiologic, metabolic, endocrinologic, and pharmacologic events related to pathologic development of the fetus. A major research interest is diabetes during pregnancy, specifically the aberrations in embryogenesis associated with the intrauterine environment in diabetic pregnancies; development of better techniques to detect fetal distress; identification of mechanisms responsible for stillbirths, neonatal deaths, and perinatal complications; intermediary metabolism and hormonal interactions in infants of chronically and gestationally diabetic women; and the impact of prepregnancy diabetes and gestational diabetes on the morphology, function, and metabolism of the placenta and on uterine blood flow.

Studies of premature labor and birth include morphology, biochemistry, endocrinology, and physiology of the pregnant uterus and its contents. The mechanisms related to the initiation and conduct of labor, the causes and prevention of the abnormal termination of pregnancy, and the development and evaluation of biomedical instrumentation, procedures and concepts of care for use in labor, delivery, and neonatal periods are also of importance.

Basic and clinical studies are also supported on the etiology, pathophysiology, therapy, and followup of conditions and syndromes such as asphyxia, respiratory distress, hypoglycemia, hyperbilirubenemia, anemia, erythroblastosis fetalis, and congenital malformations in the newborn. Research on the effects of postnatal events and therapies on adaptation and subsequent development is encouraged.

Research is encouraged to advance understanding of underlying mechanisms of the sudden infant death syndrome (SIDS), to discover its probable cause(s), to identify infants at risk of becoming SIDS victims, and to explore preventive approaches. The work may involve both basic and clinical studies of the neurophysiologic, cardiorespiratory, metabolic, immunologic, genetic, pathologic, environmental, and infectious disease aspects of the syndrome.

Nutrition and Endocrinology - NICHD is concerned with basic and clinical aspects of human physical growth and development. Basic research in endocrinology and neuroendocrinology receives special emphasis. Interest continues on research to delineate the role of growth hormones (GH) in determining research on synergistic or permissive roles played by GH, thyroxine, insulin, and the somatomedins at different stages in normal growth and development.

Research in developmental nutrition focuses on the interaction of nutrients and developmental processes at the molecular level in humans and animals. Also supported are efforts to develop indices of nutritional status reflecting specific aspects of metabolic function.

Little information exists concerning the digestive and absorptive capabilities and capacities of the gastrointestinal tract during fetal life, infancy, and early childhood. Of high priority for research are: the ontogeny of gastrointestinal function (including hormonal effects on development of the tract); nutrient transport studies (including absorptive capabilities and capacities); intestinal flora/nutrient relationships (including dietary fiber, human milk, synthetic formula); local immune reactions of the gastrointestinal tract to nutrients (such as gluten sensitivity); and gastrointestinal model studies, including intestinal tissue culture studies, mathematical models of the kinetics of nutrient transport, and animal model studies of specific aspects of gastrointestinal development.

Studies are encouraged to increase knowledge of the physiological capacities and nutritional needs of neonates, especially those born prematurely and those born small for gestational age. Studies that evaluate the molecular variations in human and cow milk as they relate to the nutrition and metabolism of the developing infant are of considerable interest. The Center also seeks studies that focus on the immunological properties of human milk, the mechanisms of allergic reactions associated with specific diet components, and the relationship between nutrition and the developing immune system.

Research on childhood antecedents of adult disease focuses on diabetes mellitus and childhood obesity. Priority is given to epidemiologic work to determine the heterogeneity of diabetes mellitus. Genetic studies to ascertain genetic markers that could be used to identify potential diabetics early in childhood are of major importance. Other program emphases include the epidemiology and heredity of the various types of obesity, and the association of obesity with hyperinsulinemia and insulin resistance. Studies of the interactions of the central nervous system with nutrition have much to offer in explaining the etiology of obesity and insulin resistance, and resarch is encouraged on the psychology of taste and satiety and the roles of sensory and cognitive factors in food intake. Research in clinical nutrition will emphasize the psychosocial, evolutionary, and anthropological aspects of nutrition. Four areas have been identified for this effort:

(1) Nutritional Individuality

Man's interaction with food is a continuing process, and this interaction comprises the most intimate, prolonged, and pervasive exposure to environment. The interaction with food begins *in utero,* and continues to be molded after birth by the mother-infant relationship. Research is needed on this special relationship as well as on other cultural and behavioral determinants of individual nutrient intake, hunger, and satiety. Studies of dietary choices and research on the anthropologic bases of food totemism and taboos will also be emphasized, as well as investigations of psychological, genetic, and chemical determinants of taste and the development of dietary patterns.

(2) Nutrition and Evolution

Much needs to be learned about the nutritional needs of individuals and of ethnic and cultural groups. Some nutritional research as it relates to population genetics and biological evolution is now underway, but more study is needed on the evolutionary modification of digestive processes under the selective pressure of certain foods. The relationship of the geophysical environment to cuisine, culture, health, and disease is an important research area.

(3) Development and Modification of Dietary Patterns

In addition to evolutionary and developmental problems in nutrition, studies are needed on other aspects of nutrition, such as development of taste preferences and eating habits; modification of poor dietary habits; adaptation to dietary change; and evaluation of success in long term dietary modification.

(4) Pregnancy

Food cravings and aversions occur frequently during pregnancy. The social, psychological, and physiological determinants of such behavior must be better understood, especially in reference to the effects of aberrant patterns of food consumption on maternal and fetal health.

Human Learning and Behavior Branch

NICHD is concerned with the development of human behavior from birth through adolescence to maturity. In its support of research and training programs, it seeks to determine how and what psychological, social, and biological factors interact, influence, and interfere with the normal development of the individual. The Institute also attempts to identify the critical periods when the developing person is most vulnerable to specific disorders.

Learning and Cognitive Development - Areas of major interest include attention, perception, psychomotor, and sensory processes. Investigations of conditioning, discrimination, memory, concept formation, and reinforcement are also included. Socialization factors related to motivation and competence are of interest, as are biological and behavioral studies of learning and performance.

Human Communications Research - Studies promoted relate to the biomedical and behavioral processes and mechanisms involved in the development of normal communication skills and to those factors that may interfere with the normal development of these skills. The role that communication plays in human growth and development is also of interest. Current emphasis is on studies of the processes, the acquisition and the development of such essential skills as speech, language, and reading. Of special interest is the reading disorder known as developmental dyslexia.

Personality and Social Development - NICHD supports studies on the growth and differentiation of concepts of self, on the acquisition of values and behavioral controls, on the nature and development of personality, and on the effects of social context. The influence of child rearing practices on personality and social development is of major interest. Studies to determine concepts of effective parental practices and how these are affected by the socioeconomic environment are encouraged. Research aimed at developing effective parental strategies for one-parent families is particularly needed as are studies which will lead to health promotion and the prevention of smoking and other behaviors harmful to health.

Developmental Behavioral Biology - Emphasis is given to developmental studies, particularly those that attempt to describe the effects of early experience on the developing brain and behavior. Studies relating to quantitative assessment of the maturation of sensory functions and perception in the developing infant and child, and their modification by early experience, are emphasized. Research is supported on behavioral genetic studies and ways in which the environment modifies genetic contributions to the expression of social, emotional and cognitive-intellectual behaviors.

Mental Retardation and Developmental Disabilities Branch

The Mental Retardation and Developmental Disabilities Branch is the focal point within the NIH for support of research and research training in mental retardation. This Branch also aids studies on the wide range of developmental disabilities of social and biological origin. With a view toward prevention and amelioration, investigations are directed toward a better understanding of the etiology, epidemiology, pathophysiology, diagnosis, and behavioral aspects of mental retardation. Clinical and applied studies involving retarded subjects, their families, and families at risk for retardation are included.

Etiology of Mental Retardation - Areas of interest include: the role of biochemical processes on deficits in learning, memory and behavior; disturbances to fetal growth and brain development including the effects of infectious and toxic agents; chromosomal aberrations and genetic disorders; and the multiple social, environmental, familial, cultural, and health conditions associated with mental retardation in seriously disadvantaged populations.

Pathophysiology of Mental Retardation - Biological studies of interest include those focusing on morphological, histological, and ultrastructural aspects of the brain, CNS malformations, and sensory defects and their relation to learning and development. Investigations on the pathogenesis of behavioral and learning deficits focus on stimulus factors (language, hearing, and communication) and elements in cognition (perception, memory, and motivation).

Prevention of Mental Retardation - The Center encourages research into new methods, including antenatal diagnostic approaches, for detection of factors that portend the occurrence of mental retardation. Genetic and cytogenetic studies that focus on identifying the cause(s) of nondysjunction will be supported. Mechanisms of gene action, particularly as they may contribute to abnormal function, as in Down's syndrome, are also of interest. The NICHD supports investigations of treatment methods, such as diets and enzyme replacement, and seeks research to provide new knowledge about the psychological and socioenvironmental needs of disadvantaged infants and children whose retardation is identified in educational settings. Studies aimed at identifying special child rearing techniques that contribute to optimal performance of retarded infants and children are encouraged.

Amelioration of Mental Retardation - NICHD supports studies on ways to improve intellectual and social performance of the retarded through sensory-motor and perceptual training, symbolic and linguistic mediation, remedial and programmed instruction, and behavioral modification. Relevant to treatment are studies on family interaction patterns, patterns of care and delivery systems, and the impact which public and professional attitudes have on the behavior of retarded persons.

Mental Retardation Research Centers Program - This Research Center Program is a major resource of the Institute and Nation for multidisciplinary research and training in mental retardation. Twelve regional centers represent long term Federal commitments to research in mental retardation and related aspects of human development.

Epidemiology and Biometry Research Program

The Epidemiology and Biometry Research Program (EBRP) conducts research on the epidemiology of disorders of mothers and children, on perinatal mortality and morbidity, and on abnormalities of human growth and development.

The EBRP does not provide grants; all research funded by the Program is conducted under contract. Periodically, the EBRP issues Requests for Proposals (RFPs) to solicit contract proposals for a specific project.

Breast feeding is a major research priority of the EBRP. A study on infant feeding among the Pima Indians and surveys on breast and bottle feeding in the U.S. have been supported. Research on the effects of chemical toxins on reproductive efficiency, on the risks and benefits of electronic fetal monitoring, and on high risk pregnancies, including adolescent and diabetic pregnancy, is also of interest.

SPECIAL PROJECTS, PROGRAMS, OR AWARDS

Major Research Program (MRP) grants are used to promote and support multidisciplinary research efforts in areas where knowledge gaps are not sufficiently addressed by current research, or where efforts in promising research areas need to be stimulated or intensified. Areas of concern include, but are not limited to, the following:

- diseases and disorders of pregnancy;
- normal and abnormal mechanisms determining the time and character of the onset of labor;
- nutritional, social, and behavioral problems contributing to low birth weight and other high-risk conditions in infants;
- problems of mortality and morbidity confronting the low birth weight infant before, during, and after birth; and
- developmental conditions contributing to the sudden infant death syndrome.

For additional information, contact:

Director, Center for Research for Mothers and Children
National Institute of Child Health and Human Development
Room 7C-03, Landow Building
Bethesda, MD 20205

National Institute of Child Health and Human Development

Center for Population Research	Project Grants	Program Project Grants	Center Grants	Research Career Development Awards	National Research Service Awards	Major Research Program Grants	Research and Development Contracts
Reproductive Sciences	■	■	■	■	■		
Contraceptive Development							■
Contraceptive Evaluation							■
Social and Behavioral Sciences	■	■	■	■	■		■
Center for Research for Mothers and Children							
Clinical Nutrition and Early Development	■	■		■	■	■	■
Human Learning and Behavior	■	■		■	■		■
Mental Retardation and Developmental Disabilities	■	■	■	■	■		■
Epidemiology and Biometry Research Program							■

National Institute of Dental Research

MISSION

The National Dental Research Act of 1948 established the National Institute of Dental Research (NIDR) to conduct and foster research on the cause, diagnosis, and treatment of dental and oral diseases. NIDR conducts intramural research in its own laboratories in Bethesda, and supports extramural research and development by awarding grants and contracts to universities and other research institutions. Because of the manpower shortage in many areas of dental research, NIDR makes awards to individuals and to institutions for training new investigators. Extramural awards are made through the Institute's National Caries Program (NCP), Dental Research Institutes and Special Programs, and categorical extramural programs.

GENERAL PROGRAMS

National Caries Program

Started in fiscal year 1971, the National Caries Program is a research and development effort aimed at reducing the incidence of dental caries. The program is organized into an extramural grants and contracts branch and an intramural research component to accelerate the research and development required to accomplish the mission. Since the caries process involves specific bacteria, dietary components and a susceptible tooth, the program seeks to prevent disease by modifying one of these factors. Strategies focus on development of agents that inactivate the microbial process of caries, that increase the resistance of the tooth, or that decrease the potential of the diet to support caries.

Within the framework of these objectives, research will continue on the physiology of plaque, the development and testing of antimicrobials, and the feasibility of a vaccine to prevent caries. Information is also sought on the efficacy and mechanism of topical fluorides; the anticariogenic effect of dietary additives; the role of trace elements in caries inhibition; and the development of noncariogenic sweeteners. Those etiologic processes of coronal and root caries that remain incompletely defined will also continue to receive research support.

With improvement and acceptance of preventive methods as another objective, the program conducts studies in health education and motivation, as well as in techniques for predicting costs and benefits of new programs. Demonstration projects of limited duration also also supported. Examples of areas of needed research include:

- determination of the number and distribution at various tooth sites and elsewhere in the oral cavity of potentially cariogenic organisms, such as *Streptococcus mutans, S. sanguis, S. salivarius, S. mitior, Rothia* sp., enterococci, lactobacilli and actinomyces;
- examination of the salivary and microbiological determinants of plaque formation and ecology, including salivary pellicle, adherence factors, and bacterial salivary components, which influence the growth and metabolic activity of the plaque flora;
- development of a caries vaccine, which will require identification of immunogenic cell surface components of cariogenic organisms, methods for estimation of immune responses to such antigens, assessment of the contributions of systemic and secretory responses, elucidation of the mechanisms of uptake and sequence of antigen processing in peripheral and central secretory immune sites, and evaluation of the importance of cell mediated immunity of mucosal surfaces in caries etiology and prevention;

- physio-chemical characterization of the caries process in enamel and cementum;
- determination of the cariostatic mechanism of action of fluoride and the influence of other trace elements both on the tooth and on the cariogenic oral flora;
- synthesis or isolation of new potentially noncariogenic sweeteners;
- the evaluation of taste, stability, and safety of such noncariogenic sweeteners and their effect on microbial metabolism, plaque formation and caries development; and
- development of reliable and feasible methods for early detection and prediction of dental caries.

For additional information, contact:

Chief, Caries Research Grants and Contracts Branch
National Caries Program
National Institute of Dental Research
Room 522, Westwood Building
Bethesda, Maryland 20205
(301) 496-7884

Periodontal Diseases Program Branch

NIDR supports a broad range of research on human periodontal diseases through research and training grants, contracts, and fellowships. Most of these projects fall in four major areas of interest.

Microbiology

The Institute supports etiologic studies, which include the identification of specific pathogenic bacteria and investigations on the immunologic, enzymatic, or other toxic activities that may cause periodontal diseases.

Inflammatory and Immune Responses

Since the most common form of periodontal disease, periodontitis, is characterized by chronic immune inflammation, NIDR emphasizes studies on immune mechanisms that produce inflammation and tissue destruction. Thus, major attention is given to the biological sequences that result in the release of lymphocyte products or host enzymes that cause the dissolution of collagen, the destruction of fibroblasts, the inhibition of protein synthesis, and the resorption of bone.

Prevention, Diagnosis, and Treatment

To improve treatment and prevention, NIDR encourages clinical studies on periodontal therapy. Such work includes studies to improve oral hygiene procedures, to develop antimicrobial agents, and to devise mechanisms for controlled release of antimicrobials. Also supported is research to develop refined qualitative and quantitative methods to assess periodontal disease objectively.

Tissue Structure and Metabolism

NIDR supports research on the normal biochemistry and metabolism of the periodontal tissues. Studies of the synthesis and degradation of collagen, proteoglycans, and bone are of particular interest.

Specialized Clinical Research Centers for Periodontal Disease - In 1976, NIDR began establishing clinical research centers devoted to periodontal diseases. The objective of the centers is to accelerate the acquisition of new information for prevention, diagnosis, and treatment of periodontal diseases. The three centers currently supported by this program are concentrating on the etiology, characteristics, and treatment of periodontal disease and on disease prevention, immunologic, and other host responses.

For additional information, contact:

Chief/Scientist Administrator, Periodontal Diseases Program Branch
National Institute of Dental Research
Room 519, Westwood Building
Bethesda, MD 20205, (301) 496-7784

Restorative Materials Program Branch

Until dental and oral-facial disorders are eradicated, suitable materials will be needed to repair damaged tissues, to restore function and appearance, and to prevent oral diseases. NIDR supports research through grants and contracts in both the physical and biological sciences to develop these materials.

Dental Restorative Materials

The Institute encourages research to improve the effectiveness and longevity of silver amalgam filling materials commonly used for posterior teeth and the composite materials now widely used for filling in anterior teeth. Efforts are being made to strengthen the composites so that they can be used in posterior teeth as well and to develop new filling and adhesive materials.

Adhesive Sealants

NIDR supports research to increase the efficacy of adhesive sealants in preventing tooth decay and to improve the cost/benefit ratio of this measure. Thus, NIDR encourages development of more effective materials which can be applied safely, easily, and rapidly, and which adhere for extended periods.

Prosthetics

Since the future cost and availability of gold for dental restorations and prosthetic appliances are uncertain, NIDR encourages research to develop non-precious, low-cost metal alloys to use instead of gold and to improve the techniques for using these alloys. In addition, the Institute supports the development of durable, easily fabricated materials for maxillofacial prostheses to correct congenital defects or defects resulting from surgery or accidental injury.

Implants and Transplants

There is an increasing interest in artificial implants to replace individual teeth or to provide anchors for bridges or dentures. A number of materials, designs, and procedures are now being evaluated in animals, and further studies are sought to assess the influence of chemical composition and design on implant acceptability and retention. The Institute has recently begun support of limited clinical trials in this area. Research to explore natural tooth transplants and replants is also encouraged.

Endodontics

Since teeth can often by saved by root canal therapy, research to improve materials and techniques for this procedure is invited.

Instrumentation

Development of new and improved dental diagnostic and treatment devices is encouraged.

For additional information, contact:

Chief/Scientist Administrator, Restorative Materials Program Branch
National Institute of Dental Research
Room 506, Westwood Building
Bethesda, MD 20205, (301) 496-7492

Craniofacial Anomalies Program Branch

Studies on malocclusion, cleft lip and palate, craniofacial syndromes, and acquired craniofacial disfigurement are supported through research grants and contracts. Research training in these areas is supported through institutional and individual postdoctoral fellowships.

Malocclusion

NIDR supports investigations on the diagnosis and treatment of malocclusion of the teeth, a common development defect which is costly to correct. Other studies are directed toward understanding the cellular and chemical activities involved in orthodontic tooth movement, and in normal and abnormal facial growth.

Clinical studies of interest include those related to growth and development, improved methods of growth prediction, early diagnosis and interceptive procedures, tooth eruption and its role in the development of occlusion, skeletal remodeling, the effects of malocclusion and its treatment on dental health, improvement of treatment methods, post treatment stability, and patient motivation.

Topics for basic biological study include mechanisms of tooth eruption and root resorption, the role of the periosteum in bone formation and remodeling, the migration of muscle attachments on growing bones, the nature of the physical stimuli which determine the shape and trabecular pattern of bone, and augmentation of bone deposition and resorption.

Cleft Lip and Palate

NIDR supports research in the cause (including the molecular mechanism involved) and treatment of cleft lip and palate and other facial disfigurements. Because a clinical study on treatment has shown that conventional surgery for cleft lip tightens the lip and restricts normal growth of the maxillary bones, new methods of lip repair are being sought. Another major effort involves the study of the psychosocial impact of this congenital defect on the patient, siblings, and parents.

Craniofacial Syndromes

NIDR fosters research on craniofacial malformations, which are less common but more disfiguring than malocclusion and cleft lip or palate. Such anomalies may include a misshapen or partially missing lower jaw, eyes set excessively apart (hypertelorism), and defective bony sutures which cause distortion of the facial structures and damage to the growing brain. Although surgical procedures, operating room management, and postoperative care have improved for these patients, research is needed to evaluate the physiological function and psychosocial status of these patients on a long term basis.

Acquired Craniofacial Disfigurement

Disfigurement of the head and face from vehicular or athletic accidents or from ablative surgery affects craniofacial growth and function and may also cause psychological disturbances. Investigations are needed to examine the magnitude of the problem of traumatic injury to the craniofacial structures and the biologic and psychosocial impact on children and adults. Research is required to find ways of improving emergency care, of preventing secondary infections, and of promoting wound healing without scarring. The basic and applied research needed ranges from studies on collagen metabolism to the treatment of speech disabilities associated with acquired defects.

For additional information, contact:

Chief/Scientist Administrator
Craniofacial Anomalies Program Branch
National Institute of Dental Research
Room 520, Westwood Building
Bethesda, MD 20205
(301) 496-7807

Pain Control and Behavioral Studies Program Branch

NIDR encourages research on oral-facial pain problems and on behavioral factors involved in dental disorders and treatment. For example, support is provided not only for basic studies of trigeminal nerve function, but also for applied studies comparing the effectiveness of different procedures for preventing or relieving pain associated with dental treatment. Proposals to improve anesthetic and analgesic agents, studies in toothgrinding (bruxism) and temporomandibular joint dysfunction, and studies to improve methods of measuring and reducing the fear and anxiety associated with dental treatment in both adults and in children are also encouraged.

NIDR supports proposals to study social and behavioral factors in the etiology of oral diseases, the psychosocial complications associated with congenital and acquired craniofacial malformations, and problems related to oral-facial sensory and motor deficits. The Institute also invites studies on specific behaviors influencing oral health or dental treatment and on the adoption, by both individuals and the public, of specific preventive measures.

Support is provided through research grants and contracts. Research training is supported through institutional and individual postdoctoral fellowships.

For additional information, contact:

Chief/Scientist Administrator
Pain Control and Behavioral Studies Program Branch
National Institute of Dental Research
Room 505, Westwood Building
Bethesda, MD 20205
(301) 496-7491

Soft Tissue Stomatology and Nutrition Program Branch

Studies in nutrition, oral cancer, oral ulcerative diseases, salivary secretions, disorders of the dental pulp, and mineralization are supported through research grants and contracts. Research training in these areas is supported through institutional and individual postdoctoral fellowships.

Nutrition

NIDR supports research aimed at obtaining a better understanding of the role of poor nutrition as an etiologic factor in oral disease, and of the role of sound nutrition as a preventive measure. Epidemiologic, laboratory, and human clinical studies are encouraged. Of particular interest is research to assess the effect of nutritional deficiencies and excesses on the protective function of saliva, the integrity of an oral mucous membrane, the immune response, tooth development, bone resorption, and periodontal disease.

Oral Cancer

NIDR supports efforts to develop methods for early detection of neoplastic diseases of the oral tissues. Also encouraged are studies on the causative factors of oral cancer and on the mode of action of various carcinogens affecting the oral cavity.

Oral Ulcerative Diseases

The two major ulcerative disorders of concern to NIDR are herpes simplex infections (cold sores or fever blisters) and aphthous stomatitis (canker sores). Clinical manifestations of the oral-facial infections vary widely, and severity is somewhat higher in children and young adults. Herpes simplex virus causes serious infections of the eyes and brain that may lead to blindness or lethal encephalitis, and one type is associated with cervical cancer.

Because of the ubiquitous nature of these viruses, their oncogenic potential, and the lack of successful treatment regimens, research grant applications are being sought for a variety of pertinent studies. Included is research to characterize the immunological aspects of these oral virus infections, to further develop appropriate animal systems for herpetic gingivostomatitis and herpes labialis, to study oral-facial tissue localization and reactivation of the virus, to investigate the role of herpes virus in oral cancer, to develop chemotherapeutic substances against HSV infections, to improve the diagnosis of herpes infections, and to develop a vaccine that will protect against HSV infections.

Recurrent aphthous stomatitis (RAS, commonly called canker sores) also affects a high percentage of Americans, with estimates ranging from 10 to more than 50 percent of the population. RAS varies greatly in severity; this infection may be accompanied by ulcers in extraoral sites, as in Behcet's syndrome, which affects genital mucous membranes and portions of the eye.

Because the etiologies of RAS and Behcet's syndrome are unknown and because many factors appear to be involved in these conditions, NIDR encourages a variety of basic and clinical research to advance knowledge of these conditions. Included are studies to acquire sound epidemiologic data, to develop animal models, to identify etiologic factors, to analyze immunological aspects, to improve diagnosis, and to develop preventive measures and new treatments.

Salivary Secretions

Since saliva is thought to be important in maintaining the health of oral tissues, NIDR supports research on the composition and function of the secretions in health and disease. Studies on the structure and function of the salivary glands are also sought. Emphasis is given to mechanisms involved in secretory transport and to the nature of the protein constituents of the secretions. The program also supports studies on embryogenesis, morphodifferentiation, cell transformation, and other biological processes of the glands.

Disorders of the Dental Pulp

Many teeth are lost each year as a result of degenerative changes of the dental pulp following carious lesions, trauma, and restorative procedures. The Institute encourages research evaluating normal pulp physiology and new and traditional treatment procedures.

Mineralization

Support is provided for studies of mineral metabolism, including normal and abnormal calcification mechanisms, and the nature of connective tissue matrices. Of interest are studies on the morphologic and biochemical aspects of mineralizing systems, the relationships of cellular metabolism to the control of mineralization, the compartmentalization concept in bone and teeth, and factors initiating and regulating mineralization and demineralization.

For additional information, contact:

Chief/Scientist Administrator
Soft Tissue Stomatology and Nutrition Program Branch
National Institute of Dental Research
Room 510, Westwood Building
Bethesda, MD 20205
(301) 496-7807

Dental Research Institutes and Centers Program

This Program, started in 1967 to attract scientists from different fields to work together on dental and oral health problems, currently supports five university-based dental institutes or centers through research grants. These centers perform research in the following areas: caries and periodontal diseases, nutrition, viral diseases, the growth and function of both the masticatory apparatus and the craniofacial region, blood clotting, biomaterials, pain control, and salivary secretions.

For additional information concerning this program, contact:

Chief, Dental Research Centers and Special Programs
National Institute of Dental Research
Room 509, Westwood Building
Bethesda, MD 20205
(301) 496-7748

SPECIAL PROJECTS, PROGRAMS, OR AWARDS

Special Dental Research Award

NIDR awards a special research grant, the Special Dental Research Award (SDRA), which provides limited funds to newly trained scientists for independent investigations into basic or clinical projects related to NIDR research areas described here. As with other research grant applications, SDRA proposals must undergo initial review for scientific merit by an initial review group and final review by the National Advisory Dental Research Council.

Investigators with no more than 4 years of research experience beyond completion of research training may apply for an SDRA grant. Principal investigators on regular NIH research grants *are not* eligible for these Special Dental

Research Awards, nor may the grants be used to support thesis research. Applicants may request a maximum of $25,000 direct costs per year, for each of 3 years.

For additional information, contact:

Chief, Dental Research Centers and Special Programs
National Institute of Dental Research
Room 507, Westwood Building
Bethesda, MD 20205
(301) 496-7748

Cooperative Agreement with Minority Biomedical Support (MBS) Program

By agreement with the Division of Research Resources (DRR), which administers the MBS Program, NIDR will provide support to approved, NIDR-relevant projects in MBS grant applications. Such projects must deal with areas of interest as described in the general program descriptions above and must be approved by the National Advisory Dental Research Council. The total amount of such support is negotiated annually with DRR.

For additional information about this program, contact:

Chief, Dental Research Centers and Special Programs
National Institute of Dental Research
Room 507, Westwood Building
Bethesda, MD 20205
(301) 496-7748

Cooperative Agreement with Minority Access to Research Careers (MARC) Program

By agreement with the National Institute of General Medical Sciences (NIGMS), which administers the MARC Program, NIDR will provide funds to approved, NIDR-relevant MARC fellowship applications. Such applications must seek support for training in areas of need to the NIDR, and must be approved by the National Advisory Dental Research Council.

For additional information, contact:

Special Assistant for Research Manpower
National Institute for Dental Research
Room 509, Westwood Building
Bethesda, MD 20205
(301) 496-7748

National Institute of Dental Research

	Project Grants	Program Project Grants	Center Grants	Research Career Development Awards	National Research Service Awards	Special Dental Research Award
National Caries Program	■	■		■	■	■
Periodontal Diseases Program Branch	■	■	■	■	■	■
Restorative Materials Program Branch	■	■		■	■	■
Craniofacial Anomalies Program Branch	■	■		■	■	■
Pain Control and Behavioral Studies Program Branch	■	■		■	■	■
Soft Tissue Stomatology	■	■		■	■	■
Dental Research Institutes and Centers Program			■	■	■	

National Institute of Environmental Health Sciences

MISSION

The Division of Environmental Health Sciences was created in 1966 and was elevated to the National Institute of Environmental Health Sciences (NIEHS) in 1969. The Institute conducts and supports research that will contribute to a better understanding and ultimately to the prevention of environmentally induced diseases and disorders. This research is conducted in laboratories in Research Triangle Park, North Carolina, in a satellite laboratory at the CV Whitney Marine Laboratory at the University of Florida-Marineland, Gainesville, Florida, in a seasonal laboratory at Mount Desert Island, Salsbury Cove, Maine, and at other institutions through the support of extramural research and research training in environmental health sciences. NIEHS fosters basic and applied research on:

- how and where potentially harmful environmental agents are released into the environment;
- how these agents move and possibly change as they move through the environment;
- the extent of exposure of various population groups, especially populations sensitive to these agents;
- what effects these agents cause by themselves and in combination with other agents in the environment;
- what happens in biological systems after exposure to hazardous agents; and
- what diseases are caused by these agents.

The Institute also supports efforts to identify hazardous environmental agents before they are released into the environment. Such work includes development, testing, and validation of biological test systems to predict the toxicity in man occurring from exposure to environmental factors.

GENERAL PROGRAMS

Prediction, Detection, and Assessment of Environmentally-caused Disorders

Effective forecasting technology, identification of the sources, and an understanding of the dynamics of transport and the conversion of contaminants are essential in establishing appropriate priorities and guides for biologic research. An understanding of changing human exposure patterns, technology surveillance, and disease-forecasting capabilities is important in this effort.

The current program on prediction, detection, and assessment of environmentally-caused diseases and disorders addresses many of these issues. Increased awareness of the relationship of environmental factors to disease and the development of more sophisticated research tools have spurred both retrospective and prospective studies on a wide variety of chemicals, minerals, and other substances to which man is exposed. Investigations include those concerned with air pollutants (gaseous and particulate) in home, school, and factory environments; chemical additives to consumable items and to cosmetics; naturally occurring toxic substances in food and water; and a variety of toxic chemicals routinely used in manufacturing and agriculture. NIEHS is addressing hazards that may occur from increased coal consumption, from the use of nuclear energy, from solar energy, and from high-voltage energy transmission. The challenge is to ascertain the dangers to man inherent in our technological society and to adopt control and prevention measures that will safeguard man's health. Additional effort is required if we are to identify and prevent new problems rather than react to those discovered through hindsight. NIEHS sees a need for further investigation of asbestos and other minerals. Research is also supported to determine the effects of a variety of air pollutants, pesticides, and contaminants and additives in water and food. The health effects of radiation from microwaves and high-voltage transmission lines, ultraviolet radiation, and noise are of interest. There is a need to define the relative susceptibility of various age groups to all of the above factors.

The current program includes support through individual research grants, program project grants, New Investigator Research Awards (formerly known as Young Environmental Health Scientist Research Grants), Research Career Development Awards, Academic Investigator Awards, and research contracts.

Mechanisms of Environmental Diseases and Disorders

Research on the biochemical and biological mechanisms of disease:
- will contribute to the development of the most efficient means of disease prevention;
- will provide information regarding the relative susceptibility of people who are at higher risks (by virtue of their genetic background, nutritional status, pre-existing disease state, or lifestyle);
- will improve ability to predict long term chronic effects;
- will contribute to the development of sensitive assay systems;
- will improve ability to reliably extrapolate the results of laboratory animal studies to man; and
- will improve the capability of regulatory agencies to control general exposure to known hazards.

The scientific community is aware of research needs in the area of environmental health science and has responded to the degree that research support has been made available. However, additional research, critical for a better understanding of the mechanism of action of environmental agents on man's health, is necessary. For example, the role of air pollutants, including the various gaseous components and particulate matter, on human disease processes is not fully understood; dose-response relationships are still unresolved for many of these components. While it is known that particulates of asbestos, coal, silica and others can be deleterious to man, the mechanisms of pathogenesis are still not understood.

Little is known about the susceptibility of various population groups to environmental disease. Thus, we need additional information on the biological status of the young, the aged, the nutritionally deficient, and those of differing genetic backgrounds.

Research must be expanded on the naturally occurring substances in the environment which may by themselves, or in combination with other compounds, affect man's health. Included are heavy metals, aflatoxins, radionuclides, and various physical factors.

NIEHS supports such work through individual research grants, program project grants, New Investigator Research Awards (formerly known as Young Environmental Health Scientist Research Grants), Research Career Development Awards, Academic Investigator Awards, and research contracts.

Environmental Health Research and Manpower Development Resources

This program is divided into three subprograms: Environmental Health Sciences Centers, Marine and Freshwater Biomedical Centers, and Research Manpower Development.

Environmental Health Sciences Centers

Environmental Health Sciences (EHS) Centers provide core support to aid multidisciplinary research in environmental health problems. Each center has a different primary orientation, but together the centers serve as national focal points and resources for research and manpower development in health problems. Areas of particular interest include: air, water, and food pollution; occupational and industrial neighborhood health and safety; heavy metal toxicity; agricultural chemical hazards; the relationships of the environment to cancer, birth defects, behavioral anomalies, respiratory and cardiovascular diseases and diseases of other organs; the basic aspects of toxicity mechanisms and body defense mechanisms; and the influence of age, nutrition, and other factors in chemically induced injury and disease.

These core centers will continue to develop data on fundamental aspects of toxicant metabolism and mechanisms of damage at the molecular and cellular levels. They will assess health effects of chemical and mineral agents in use, or proposed for use, emphasizing chemical epidemiology and methodology for detecting early symptoms and signs of disease and injury. Center grant proposals usually evolve within a university as a result of highly productive research and training activities relevant to the Institute's mission. It is expected that the university will provide long term commitment of physical facilities and staff to foster effective operation and development of the center. A guideline for proposal preparation is available from NIEHS.

Marine and Freshwater Biomedical Centers

Marine and Freshwater Biomedical (MFB) Centers provide core support to foster and accelerate multidisciplinary research on marine and freshwater organisms. Such organisms act as model systems for elucidating the mechanisms of toxicity of environmental agents because pathologic damage induced by toxic substances in man is often reproducible in the organs and tissues of these life forms. In all centers, particular emphasis is placed on the relevance of marine and freshwater model systems to assure that research will provide a base for assessment and prevention of human environmental health problems. Guidelines for proposal preparation are available from the Institute.

Research Manpower Development Program

Institute research manpower development training programs are supported through the institutional (pre- and postdoctoral level) and individual (postdoctoral level) National Research Service Awards (NRSA). Applications for National Research Service Awards will be accepted by NIEHS:

- in environmental toxicology, emphasizing training in the principles that determine the effects of exposure to environmental agents;
- in environmental pathology, emphasizing training in chemical, as opposed to infectious disease, pathology;
- in environmental mutagenesis, emphasizing training in genetics and biochemistry to assess potential genetic hazards to man of environmental chemicals; and
- in environmental epidemiology and biostatistics, emphasizing training in the use of statistical and mathematical tools to identify environmental diseases in human populations, and in experimental design and interpretation.

Training sites (sponsors) must have demonstrated a major commitment to an ongoing research program in an environmental health sciences area consistent with the NIEHS mission.

SPECIAL PROJECTS, PROGRAMS, OR AWARDS

Mid-Career Development Award-Environmental Toxicology (MDA-ET)

The Mid-Career Development Award-Environmental Toxicology is designed to encourage individuals to enter careers in environmental toxicology. Although some past experience in environmental research will not disqualify candidates, the program is designed to enable an investigator unfamiliar with toxicology research to work on problems under the guidance of a sponsor who is established in the environmental toxicology field. Research should be performed at an institution conducive to rapid orientation of the investigator to scientific and regulatory facets of human environmental health problems. These awards provide support for up to 3 years and are not renewable or transferable.

Research Career Development Award (RCDA)

This is a special salary grant to support studies by those with potential for research careers in areas stressing the mission of NIEHS. The RCDA provides an opportunity for an individual in the early stages of a research career to acquire the skills and experience necessary for undertaking independent research. Awards are available to persons whose research potential is apparent but who need additional experience. The award is not intended for untried investigators or for those already established as independent investigators.

Young Environmental Scientist (YES) Health Research Grant Program

The YES program is a New Investigator Research Award that is intended to encourage young investigators to develop an interest in basic and applied aspects of environmental health sciences. From the support provided to these investigators for their initial research efforts, career development in areas related to the NIEHS mission is fostered.

Research areas of program interest include: environmental mutagenesis, carcinogenesis, and teratogenesis; environmental epidemiology and biostatistics; environmental pathology; environmental pharmacology and toxicology; behavioral toxicology; and marine biomedicine and pharmacology. Special emphasis is placed on the identification of environmental hazards and the development of test methods for their risk assessment. Pollutant pharmacokinetics in both the body and the external environment, and mechanisms of molecular and cellular damage are important research areas.

Research Contracts

NIEHS awards research contracts when the research cannot be conducted within Institute facilities, when the need for such research is identified by the NIEHS staff, and when the work represents an extension of some well-delineated aspects of ongoing programs. Areas encompassed by contracts, therefore, parallel and complement extramural projects at other institutions. Intramural programs, i.e., those programs conducted directly by NIEHS, are characterized by sharp focus in areas of recognized research needs not adequately covered or developed in academic institutions or other government agencies. These areas include: aerotoxicology; the pharmacological and toxicological actions of hazardous agents; the influences of age, sex, and other factors on toxication, detoxication and defense systems; mutagenesis, mutagenicity screening and chemical mutagenesis; heavy metals toxicity, pharmacokinetics and biologic behavior; toxicity of environmental xenobiotics; biologic effects of microwaves and noise; toxicity of environmental factors associated with defects of reproduction and development; effects of environmental agents on learning and behavior; reproductive toxicology; teratology; biometry; environmental biophysics; and development of test methodology and systems.

Requests for guidelines for special programs and program project grants or other inquiries about grant activities of the National Institute of Environmental Health Sciences should be directed to:

Associate Director for Extramural Program
National Institute of Environmental Health Sciences
P. O. Box 12233
Research Triangle Park, NC 27709

Inquiries about contracts should be directed to:

Office for Program Development
National Institute of Environmental Health Sciences
P. O. Box 12233
Research Triangle Park, NC 27709

National Institute of Environmental Health Sciences

	Project Grants	Program Project Grants	Center Grants	National Research Service Awards	Mid-Career Development Awards	Academic Investigator Award	Research and Development Contracts
Prediction, Detection, and Assessment of Environmentally-caused Diseases and Disorders	■	■	■	■	■	■	■
Mechanisms of Environmental Diseases and Disorders	■	■	■	■	■	■	■
Environmental Health Research and Manpower Development Resources			■	■			

National Eye Institute

MISSION

New knowledge concerning the normal functions of the eye and visual system, the pathology of visual disorders, and the sciences relating to vision is essential to progress against the major causes of blindness and visual disability.

Working to this end, the National Eye Institute (NEI):
- Supports research and research training aimed at improving the prevention, diagnosis, and treatment of visual disorders through grants, fellowships, and contracts to academic and research institutions;
- Conducts laboratory and clinical research in its own facilities and statistical and epidemiological studies of visual disorders in human populations;
- Fosters research on the rehabilitation of the visually handicapped;
- Encourages the application of research findings to clinical practice;
- Heightens public awareness of vision problems; and
- Cooperates with voluntary organizations that engage in related activities.

GENERAL PROGRAMS

Laboratory and clinical research is funded under the following major programs: Retinal and Choroidal Diseases, Corneal Diseases, Cataract, Glaucoma, and Sensory and Motor Disorders of Vision. Within each program, research ranges from attempts to elucidate the fundamental biological processes that underlie disease to the development and clinical testing of new diagnostic and therapeutic techniques.

Retinal and Choroidal Diseases

Unfortunately, for most retinal and choroidal diseases, there are neither means of cure nor prevention techniques available. Progress against these disorders has been severely impeded by lack of knowledge of the fundamental processes underlying retinal and choroidal function.

In response to this need, the NEI conducts and supports basic and applied research to elucidate the structure and function of the retina in health and disease. NEI-fostered investigations include studies of the structure and metabolism of the photoreceptor cells and their relationship to the underlying pigment epithelium; the mechanism of the retina's response to light and the initial processing of visual information that is transmitted to the visual centers of the brain; inflammation of the uveal tract of the eye consisting of the iris, choroid, and ciliary body; and the vitreous humor.

The NEI also supports studies that are aimed at understanding such major causes of blindness as developmental and hereditary disorders of the retina; diabetic retinopathy and other vascular and circulatory abnormalities; myopia; tumors; diseases of the macula; retinal detachment; and inflammatory disorders, including uveitis. A number of clinical trials of the effects of treatment in certain retinal diseases, most notably diabetic retinopathy, are underway.

Corneal Diseases

Included within this program are diseases of the cornea, which occur frequently and are perhaps the leading cause of blindness worldwide, and of the external ocular structures, including the conjunctiva and lids. One of the most difficult corneal diseases to treat is that caused by the herpes simplex virus. Often characterized by periodic acute recurrences, herpes simplex infections of the cornea account for more sickness and loss of vision than any other corneal infection in Western countries. Other conditions of concern in this program are inflammatory disorders of the cornea and external eye; dry eyes and tear abnormalities; disorders of the corneal epithelium; refractive problems and contact lenses; corneal edema, dystrophies, and inherited disorders; corneal transplantation and injury and repair of the corneal stroma; and tumors and other problems of the lids, conjunctiva, and orbit.

Research supported by the NEI related to corneal diseases includes studies of immunologic mechanisms, corneal opacification, edema, and improved means of drug delivery. Other important areas of corneal research include epidemiologic investigations, studies of the tear film, and tumor virology and immunology.

Cataract

Although cataract surgery is one of the most successful operations performed, this condition remains among the leading causes of blindness in the United States. For this reason, the NEI is emphasizing research aimed at the prevention and nonsurgical treatment of cataract.

The NEI's cataract research program is concerned with a number of different types of cataracts of varying etiology, including aging, diabetes, and congenital, metabolic, and genetic factors. Also of interest are cataracts occurring secondary to injury, radiation, and other eye disorders; dislocated lenses; and accommodation and optical problems of cataract and aphakia. Considerable attention is being given to studies of the chemistry and biophysics of the normal lens.

Glaucoma

Although the numerous forms of glaucoma have diverse etiologies and include primary and secondary types, research concerns common to all the glaucomas are optic nerve and vision changes, the hydrodynamics of the aqueous humor, and methods of medical and surgical treatment.

Sensory and Motor Disorders of Vision

This program encompasses a broad range of studies concerned with the structure and function of the neural pathways from the retina to the brain, the central processing of visual information, visual perception, optical properties of the eye, functioning of the pupil, and control of the ocular muscles. A large number of congenital, developmental, and degenerative abnormalities affect the visual sensorimotor system, but three disorders are of primary concern: strabismus, amblyopia, and nystagmus. These are frequent causes of visual impairment among children which may persist for life. Of particular interest are studies of the normal development of visual capacity in the infant and the effects of early sensory deprivation on the development of visual function.

A detailed description of these programs is contained within the report of the National Advisory Eye Council,Vision Research--A National Plan: 1978-1982, which also outlines the NEI's goals, objectives, and research priorities in each program. Other information contained in the report includes budgetary data, policy discussions, program and management issues, and statistical information on the incidence, prevalence, and cost of visual disorders.

Copies of *Vision Research--A National Plan: 1978-1982,* Volume One (Summary) and Volume Two (Panel Reports), DHEW Publication Nos. (NIH) 78-1258 and 78-1259 are available from:

Office of Program Planning and Scientific Reporting
National Eye Institute
Building 31, Room 6A-25
Bethesda, Maryland 20205

(Volume Three of the plan, a list of vision research projects funded during FY 1976, is out of print and is no longer available.)

SPECIAL PROJECTS, PROGRAMS, OR AWARDS

Areas of Special Interest

Clinical Applications of Psychophysical and Physiological Optics Techniques

NEI is interested in the development of concepts and techniques in psychophysics and physiological optics that have potential for contributing to improved ophthalmic diagnosis. This encompasses research on the measurement of visual resolution and acuity, visual fields, color perception, and the electrophysiological correlates of visual perception.

Cataract Prevention

NEI has a particular interest in supporting research that will lead to developing a nonsurgical means of treating or preventing cataracts. Toward this end, the study of the human lens in health and disease is of obvious importance. Grant applications involving either laboratory or clinical research, or both, are sought for this program.

Eye Diseases Associated with Diabetes Mellitus

The Institute invites research grant applications for laboratory and clinical research concerned with the pathogenesis, etiology, diagnosis, and treatment of visual system disorders which accompany diabetes mellitus and related disorders of the small blood vessels. Studies are encouraged on vasoproliferative and inhibitory factors; vascular and retinal metabolism; retinal and choroidal blood flow; blood rheology and clotting factors; physical chemistry, biochemistry, and physiology of the vitreous body in maintaining blood-retinal barriers and vitreous and retinal metabolism and structure; immunology of the vitreous body and retina in relation to diabetic retinopathy; neovascular glaucoma and other ocular complications of neovascularization; etiology and treatment of sugar cataract; and pathogenesis and possibilities for treatment of diabetic optic neuropathology and oculomotor disorders.

Animal Models of Visual Abnormalities and Disorders

NEI supports the study of a variety of genetic, developmental, degenerative, infectious, and toxic disorders of the eye and visual pathways to the brain. Animal analogs of such human disorders as congenital eye defects, hereditary degenerations of the retina, demyelinizing diseases of the optic nerve, vascular and circulatory abnormalities of the retina, and elevated intraocular pressure are valuable for such studies. Research grant applications are therefore invited for the development and characterization of such models.

Laboratory and clinical research may include investigation into the genetics, morphology, physiology, biochemistry, or behavior of animal models. NEI will consider all such research for support insofar as it has potential relevance to human visual disorders. Examples are studies of anophthalmia, the effects of prenatal infectious disease on the visual systems, and experimental teratology of the eye and optic pathways.

Awards

Research Project Grants

Individual research grants, awarded to an institution in the name of a principal investigator for a discrete project, are the primary research support mechanisms used by the NEI. Such grants generally are for projects conceived and initiated by an individual scientist. NEI also supports multicenter clinical trials through research grants. Prospective applicants for clinical trial support should contact NEI for detailed guidelines and instructions prior to the development of a clinical trial application.

From time to time NEI publishes announcements in the *NIH Guide for Grants and Contracts* to encourage the submission of research grant applications in selected priority areas of vision research. Previous issues of the *NIH Guide* may be consulted for further details.

Research and Development Contracts

The Institute limits the use of research contracts to three purposes: support of large-scale, multicenter clinical trials; instrument development; and resource development (unique chemical compounds, for example). Request for Proposals (RFPs) for research and development contracts are published in the *NIH Guide for Grants and Contracts,* the *Commerce Business Daily,* and appropriate ophthalmologic, vision research, and other scientific journals. Because NEI contract funds are limited, the Institute discourages the submission of unsolicited research contract proposals.

Individual National Research Service Awards

Support of postdoctoral research training in laboratory and clinical sciences related to eye diseases and disorders of the visual system is available through National Research Service Awards. These grants are made to individual applicants who submit specific training proposals. The training program should provide for a minimum of 2 years research training in areas of research encompassed by one of NEI's five general programs.

Institutional Grants for National Research Service Awards

NRSAS awarded to institutions support research training programs that provide opportunities for individuals who wish to pursue research careers in the clinical and laboratory sciences related to vision and disorders of the visual system. Eligible institutions may apply for a grant to support the following kinds of research training programs:

- Predoctoral Research Training. A limited number of predoctoral positions may be requested. Predoctoral trainees must have received a baccalaureate degree by the date of appointment to the approved training program.
- Postdoctoral Research Training. Postdoctoral trainees must have received a Ph.D., M.D., O.D., D.V.M., or Sc.D. degree by the date of appointment to the approved training program. The training program should provide each trainee with a minimum of 2 years of full-time research training involving the concepts and methodology of one or more of the following disciplines as they relate to NEI's five general programs: immunology, pharmacology, epidemiology, physiology, biochemistry, biostatistics, developmental biology, psychophysics, physiological optics, and genetics.
- Postresidency Research Training. Trainees must have completed a residency and clinical training in ophthalmology. The training program must be designed to provide each trainee with a minimum of 2 years of full-time laboratory or clinical research training.

Research Career Development Awards

The Institute accepts applications for Research Career Development Awards (RCDAs), designed to prepare newly-trained clinical and laboratory research scientists with outstanding research potential for careers of independent research in the sciences related to vision. Institutions may apply for awards for a 5 year period on behalf of individuals who have had 3 or more years of relevant postdoctoral research experience. Awards will be made only to those investigators who already hold an active NEI research grant or who have successfully competed for NEI research support for which an award may be issued concurrent with the RCDA. Research grants held by the applicant must have a minimum of 3 years of support remaining at the time the Research Career Development Award goes into effect.

Academic Investigator Awards

These awards are designed to facilitate development of academic faculty in clinical or laboratory sciences related to diseases of the eye and the visual system. They enable the promising newly-trained biomedical scientist to obtain the guided laboratory research, clinical research, and teaching experience requisite to the development of academic leadership. The application must reflect the institution's commitment to strengthening research and academic activities related to the visual sciences. The Academic Investigator Award supports this commitment by enabling awardees to become established both as laboratory and clinical investigators and as educators.

To be eligible for an Academic Investigator Award, candidates must be nominated by an institution in which they hold an academic appointment. The candidate must have an M.D., Ph.D., O.D., or equivalent degree plus 3 to 7 years postdoctoral research training. Completion of residency requirements will be considered equivalent to having met postdoctoral requirements. Applicants may request from 2 to 3 years of support.

The awardees will be provided a salary commensurate with their academic rank up to an annual maximum of $25,000 plus fringe benefits for the approved project period. Funds not to exceed $5,000 annually may also be requested for supplies, equipment, travel, and other costs necessary for the awardee's program. Research and teaching experience to be gained with this award may be obtained in the sponsoring institution or elsewhere as agreed upon by the candidate, the advisor, the sponsoring institution, and the NEI.

Special Visual Sciences Research Awards

NEI's Special Visual Sciences Research Award is designed to encourage newly-trained investigators to enter vision research early in their career. These grants may provide limited funds, up to $10,000 a year, for equipment, supplies, or technical support services only.

To be eligible for this award, a candidate must have received a doctoral degree or have completed residency training no more than 4 years prior to the date NIH receives the candidate's completed application.

Core Grants for Vision Research Centers

The purpose of the NEI Core Grant Program is to increase research productivity by providing central resources for individual projects already being supported by NEI and to facilitate organized collaborative efforts so that ideas and approaches from a number of scientific disciplines can be brought to bear on visual problems.

The NEI core grant does not provide direct funding for research projects. Rather, it provides support for resources, facilities, and services shared by investigators working on a number of individual research projects. It also provides preliminary support for new investigators (not more than one individual at a time for a period of approximately 12 to 24 months) to complement current research. Modest support of pilot projects, certain consultant costs, administrative costs of the core program, and travel expenses are funded by the Institute under this award. Prospective applicants should contact NEI for detailed guidelines and instructions and then file a letter of intent at least 6 months prior to submission of a core grant application.

To qualify for consideration for NEI core grant support, an organization must currently have at least four investigators with NEI project grant support and no less than six NEI-supported active research project grants.

Specialized Clinical Research Center Grants

NEI Specialized Clinical Research Center Grants are available to academic and other nonprofit research institutions interested in and capable of conducting clinical research related to the causes, prevention, diagnosis, and treatment of specific eye diseases and disorders of the visual system.

These grants are designed primarily to: foster investigations in which humans are studied, either because the problem may be peculiar to man alone or because observations on animal models have developed to a point where clinical trials are necessary and appropriate; focus research resources, facilities, and manpower on particular disease problems; encourage interaction and collaboration between laboratory and clinical investigators; and facilitate the application of laboratory research findings to clinical problems.

U.S.-Japan Vision Research Exchange Program

Under terms of a ''Memorandum of Understanding'' between NEI and the Japan Society for the Promotion of Science, investigators from the United States and Japan have been colaborating since 1976 in important areas of vision research through a scientist exchange program. Two scientists per year from each country are selected for the exchange: one investigator for a short term exchange of not less than 2 weeks or more than 4 months; the second for an exchange of not less than 3 but no longer than 12 months.

Interested scientists in both the United States and Japan select a research area in which they wish to work. They then make tentative arrangements to collaborate with an investigator of their choice in the host country before applying for the exchange program. Applicants are first evaluated by review panels in their home countries, then each panel submits its selections to the other for final approval.

Expenses for round trip travel to the host country and for a limited amount of internal travel are provided to exchangees. Depending on the length of the exchange, investigators receive either a per diem allowance or a monthly stipend which includes the cost of accommodations. Laboratory and clinical investigators interested in applying for the program should contact NEI for details and application forms.

Inquiries

Applicants for any type of NEI grant or award are encouraged to contact the NEI extramural staff in advance of submitting an application. The staff will be glad to provide information on the Institute's current program interests and to answer questions concerning the format of grant proposals.

Information regarding the NEI's grant programs may be obtained by contacting:

Associate Director for Extramural and Collaborative Programs
National Eye Institute
Building 31, Room 6A-04
Bethesda, MD 20205

National Eye Institute

	Project Grants	Center Grants	Research Career Development Award	National Research Service Awards	Academic Investigator Award	Special Vision Research Awards
Retinal and Choroidal Diseases	■	■	■	■	■	■
Corneal Diseases	■	■	■	■	■	■
Cataract	■	■	■	■	■	■
Glaucoma	■	■	■	■	■	■
Sensory and Motor Disorders and Vision	■	■	■	■	■	■
Clinical Applications of Psychophysical & Physiological Optics and Techniques	■		■	■	■	■
Cataract Prevenion	■		■	■	■	■
Eye Diseases Associated with Diabetes Mellitus	■		■	■	■	■
Animal Models of Visual Abnormalities and Disorders	■		■	■	■	■

National Institute of General Medical Sciences

MISSION

The National Institute of General Medical Sciences (NIGMS) supports research and research training in the basic medical sciences and related natural and behavioral sciences which have significance for two or more Institutes, or which are outside the general area of responsibility of any Institute.

The Institute's work is organized into five programs: Cellular and Molecular Basis of Disease, Genetics, Pharmacology-Toxicology, Physiology and Biomedical Engineering, and Minority Access to Research Careers (MARC). Interprogram cooperation is stressed because projects and developments in one program frequently are relevant and of consequence to others. Except for the MARC Program, which is limited to the support of research training, each program aims to foster and support multidisciplinary approaches and resources and uses the full range of support mechanisms—research project grants, program project grants, research center grants, institutional and individual fellowships, and contracts.

GENERAL PROGRAMS

Cellular and Molecular Basis of Disease Program

This program is devoted to a greater understanding of the function of human cells in terms of ultrastructure, on the premise that many forms of human disease are the direct result of disturbed or abnormal function of cells. Investigations receiving support are concerned with the biophysical and biochemical description and analysis of molecular events in normal and diseased cells, and the structure and function of cell organelles and membrane processes at molecular and subcellular levels. Areas of research emphasis include: the detailed submolecular structure and function of enzymes and other proteins as well as other biological substances; the development of knowledge of subcellular organelles and their constituents into more precise concepts of how the cell functions as a unit; the cell-cell interactions during morphogenesis; the mechanisms by which enzymes bring about their catalytic effects; and elucidation of the relationship between chemical structure and biological activity.

Molecular Pathology Centers

The past two decades have provided a new set of ideas and instruments for the study of disease at the subcellular and molecular levels of organization. Pathologists are now able to identify structural and biochemical changes at the subcellular and molecular levels that are characteristic of specific diseases. The Molecular Pathology Centers are intended to increase collaboration among pathologists, biochemists, biophysicists, electron microscopists, and other scientists investigating related subcellular phenomena in more quantitative molecular terms. This is expected to enhance and speed understanding of the cellular and molecular basis of disease.

For further information, contact:

Cellular and Molecular Basis of Disease Program Director
National Institute of General Medical Sciences
Westwood Building, Room 903
Bethesda, MD 20205

Genetics Program

This program is directed toward better understanding of the processes and mechanisms of inheritance in health and disease. Its objectives are the prevention and improved treatment of human genetic ills, including diseases with a strong hereditary factor, such as diabetes, atherosclerosis, hypertension, and schizophrenia.

While the various NIH Institutes appropriately consider individual diseases as discrete problems requiring a specific approach and resolution, the NIGMS Genetics Program attempts to explore strategic research opportunities which may yield broader concepts. Topics of supported research range from nucleic acid chemistry to population genetics and include the organization, transmission, and expression of genetic information. Lower organisms, such as bacteria, are used as model systems to elucidate genetic principles, while the techniques of mammalian cell culture are used for mapping human genes and for studying basic biochemical defects underlying human genetic diseases.

Genetics Research Centers

These centers foster interaction among scientists involved in basic and clinical research and facilitate the clinical evaluation of research findings. The centers provide both an abundant number of patients for study and a setting in which research findings can be clinically evaluated.

They encourage broadly based research that is likely to contribute significantly to the solution of human disease problems. New ideas and progress are engendered by familiarizing basic scientists with specific human genetic problems. The concept includes basic laboratory investigation and clinical genetics support as each relates to the overall goals.

For further information, contact:

Genetics Program Director
National Institute of General Medical Sciences
Westwood Building, Room 918
Bethesda, MD 20205

Pharmacology-Toxicology Program

This program embraces all aspects of drug-related research, from synthesis of pharmacologically active chemical structures, through elucidation of mechanisms and sites of action of drugs, to improvement of therapeutic approaches.

Also supported are related studies, such as the chemistry of natural products, chemical aspects of biological processes, relationships between chemical structure and biological activity, medicinal chemistry, and chemical methodology. Increased emphasis is being placed on clinical, including pediatric, pharmacology and on the development of new methodologies and analytical techniques. Most of the research funded by the Pharmacology-Toxicology Program is done under regular research grants initiated by individual investigators, but program project grants also support studies requiring the collaborative efforts of several investigators.

Pharmacology-Toxicology Research Centers

University-based centers in pharmacology and toxicology encompass most, if not all, of the flow of basic information to its ultimate application in man. The multidisciplinary nature of drug research involves the participation of chemists, basic and clinical pharmacologists and toxicologists, computer scientists, and clinical specialists in diverse areas.

For further information, write:

Pharmacology-Toxicology Program Director
National Institute of General Medical Sciences
Westwood Building, Room 919
Bethesda, MD 20205

Physiology and Biomedical Engineering Program

Organizationally, the Program is divided into three sections, each of which provides a focus for a major category of scientific interest.

Biomedical Engineering Section

The Biomedical Engineering Section of the Program supports the application of engineering knowledge to the solution of significant physiological and biomedical problems. Important goals are enhancing the exploration of life processes with the aid of engineering science and applying engineering control theory to studies of physiological systems. Such work encompasses the development of new types of transducers and integrated circuitry. Research in areas of biomaterials, mechanical and physiochemical properties of tissues, and the development of prosthetic devices is also supported. Also of interest is research on new methods or instruments for noninvasive measurement of physiological parameters, and on devices for delivery of biologically active substances, including pharmaceutical agents.

Instrumentation Section

This Section supports research and development related to innovative instruments and supportive methodologies in the areas of cellular biology, molecular biology, biochemistry, ultrastructural analysis, and diagnostic clinical imaging. Included among the topics of interest are: the development of new types of chemical or physical separation techniques; other general laboratory techniques for use in basic biomedical research; and the development of spectroscopic techniques and the extension of these to the study of ultrafast molecular phenomena. Development of instruments for use in basic research on problems requiring the identification, separation, enumeration, and manipulation of cells or subcellular organelles is also supported. Microscopy using all types of radiation, development of specimen preparation techniques, and methods of image analysis and development of the electron microprobe are encouraged. In the area of diagnostic imaging by ultrasound, X-ray and other forms of electromagnetic radiation, research support is for instrumentation as well as the effects of radiation on biological tissues.

Physiological Sciences Section

This Section provides support for coordinated basic and clinical investigations related to trauma and burns and to anesthesiology, which is intended to foster the rapid application to medicine of new knowledge gained from research in such areas as cell biology, physiology, biochemistry, pharmacology, behavioral sciences, and bioengineering. Research aimed at a better understanding of the total body response to trauma is supported. This includes the biochemical and physiological changes induced by trauma and the fundamental aspects of wound healing and biological repair. Research in anesthesiology is concerned with the mode of action of anesthetics and muscle relaxants, the nature of pain, basic physiologic and metabolic changes resulting from anesthesia, and the management of respiratory failures.

Additional information may be obtained from:

Physiology and Biomedical Engineering Program Director
National Institute of General Medical Sciences
Westwood Building, Room 952
Bethesda, MD 20205

Special Grants Program in Anesthesiology and in Trauma/Burn Research

NIGMS has established a Special Grants Program in Anesthesiology and in Trauma/Burn Research to provide the initial support for independent research by talented physicians who wish to address research problems presented by anesthesiology and trauma/burn research.

Further information about these programs may be obtained by contacting:

Program Administrator
Physiological Sciences Section, PBME
National Institute of General Medical Sciences
Westwood Building, Room 952
Bethesda, MD 20205

Minority Access to Research Careers (MARC) Program

This Program was set up to help minority institutions train greater numbers of scientists and teachers in biomedical disciplines. (A minority institution is defined as one in which enrollment is drawn substantially from ethnic minority groups, e.g., Blacks, American Indians, and Hispanics.) To achieve this goal, three methods of funding are used.

Faculty Fellowships

This program provides opportunities for faculty members of 4-year minority colleges, universities, or health professional schools to pursue Ph.D. degrees or obtain postdoctoral research training in the biomedical sciences. Candidates for the award are nominated by their institution, and are selected by a committee of consultants who have appropriate scientific backgrounds and are drawn primarily from the academic community. Awards may be made for 1 to 3 years. On completion of the training, fellows are encouraged to return to their sponsoring schools to do research and to teach.

Visiting Scientists

This program provides financial support to outstanding scientists-teachers to serve as visiting scientists at a minority institution. The objective is to strengthen the biomedical sciences research and teaching programs at minority institutions. The period of support can range from one academic quarter to a maximum of one year.

Honors Undergraduate Research Training

This institutional training grant program aims to increase the number of minority students who can compete successfully for Ph.D. degrees in the biomedical sciences and to develop strong science curricula and research opportunities at minority schools. The institutional award can be used for stipends and tuition for honors undergraduates in their 3rd and 4th years of study, for salaries to participating faculty, or for supplies. An applicant institution must describe its plan for strengthening its educational program in the sciences, including special arrangements for participating honors students to spend a summer at an outstanding institution or laboratory for additional research training experience.

For more information and applications, contact:

Minority Access to Research Careers Program
National Institute of General Medical Sciences
Westwood Building, Room 9A18
Bethesda, MD 20205

SPECIAL PROJECTS, PROGRAMS, OR AWARDS

Resarch Career Development Awards (RCDAs)

NIGMS accepts RCDA applications from institutions on behalf of individuals seeking a career that bridges the gap between basic and clinical sciences in one of the following fields: clinical pharmacology, trauma, burn research, anesthesiology, and biomedical engineering. Candidates should provide evidence that they have high potential for productive research careers but require additional experience. Since the rank of associate professor or the successful competition for more than one substantial research grant usually indicates that the candidate is already an independent investigator, preference will be given to individuals whose achievements at the time of application have not been so recognized.

For additional information, contact:

Fellowships Officer
National Institute of General Medical Sciences
Westwood Building, Room 955
Bethesda, MD 20205

National Research Service Awards (NRSAs)

Institutional Fellowships

NIGMS accepts applications from eligible institutions for the support of promising individuals who seek biomedical research training.

The Institute's goal in the *predoctoral* program is to provide trainees with broad access to thesis research opportunities across discipline and department lines, while not sacrificing the standards of depth and creativity characteristic of the best Ph.D. programs. Cooperative involvement of faculty members from several departments as thesis research mentors is considered evidence of such breadth.

Programs for *postdoctoral* trainees should offer a wide range of research training opportunities. For individuals holding a Ph.D. degree, training should focus on advanced and specialized areas of research and offer appropriate opportunities to study clinical problems. For trainees holding a professional degree, at least 2 years of rigorous research training should be provided.

Applicant institutions are expected to present detailed plans for the proposed training as well as criteria for trainee selection and mechanisms for quality control. The application should also give information on the qualifications of the proposed faculty participants, including their experience and current research programs and support.

Applications for support of predoctoral research training should be separate from those for postdoctoral training. In general, only one award in each of the areas listed below will be made to an institution. Before preparing an application, applicants are strongly urged to contact NIGMS staff.

Awards are made in the predoctoral areas of cellular and molecular biology, genetics, pharmacological sciences, and systems and integrative biology. A fifth area is the Medical Scientist Training Program, which leads to a combined M.D.-Ph.D. degree. Postdoctoral awards are made in the areas of basic pathobiology, genetics (with emphasis on medical genetics), clinical pharmacology, trauma and burn research, and anesthesiology.

For further information about these institutional NRSA programs, contact:

Training Officer
National Institute of General Medical Sciences
Westwood Building, Room 903
Bethesda, MD 20205
(301) 496-7021

Individual Fellowships

Postdoctoral Individual National Research Service Awards may be applied for in cellular and molecular biology, genetics (including medical genetics), pharmacological sciences (including clinical pharmacology), and systems and integrative biology (physiology and bioengineering).

For additional information, contact:

Fellowships Officer
National Institute of General Medical Sciences
Westwood Building, Room 955
Bethesda, MD 20205
(301) 496-7368

Clinically Oriented Areas

Research training support is offered: to individuals with the M.D. degree who are preparing for careers in clinical research, with emphasis placed on proposals incorporating at least 2 years of training in such basic science departments as biochemistry, genetics, microbiology, immunology, physiology, pharmacology, psychology, or biostatistics; and to individuals with the Ph.D. degree who seek competence to apply the knowledge and methods of basic biomedical disciplines to medical problems, usually in close collaboration with clinical scientists. The following areas are represented: pathobiology, anesthesiology, trauma and burn research, clinical laboratory sciences, behavioral sciences related to medicine, and epidemiology.

National Institute of General Medical Sciences

	Research Project Grants	Program Project Grants	Research Center Grants	National Research Service Awards
Cellular & Molecular Basis of Disease		■		■
Pathobiology	■			
Cell Structure & Function	■			
Membrane Structure & Function	■			
Enzyme Catalysis & Regulation	■			
Bioenergetics	■			
Proteins & Macromolecules	■			
Biomolecular Models & Mechanisms	■			
Genetics		■	■	■
Nucleic Acids	■			
Replication, Transmission & Fidelity of Genetic Information	■			
Genetic Expression	■			
Clinical Genetics	■			
Population Genetics & Gene Mapping	■			

(Continued)

	Research Project Grants	Program Project Grants	Research Center Grants	National Research Service Awards
Pharmacology-Toxicology		■		■
Pharmacology-Toxicology	■		■	
Biorelated Chemical Processes	■			
Physiology & Biomedical Engineering		■	■	■
Trauma & Burns	■	■	■	
Anesthesiology	■	■	■	
Behavioral Sciences & Adaptation	■			
Mathematical Methods	■			
Physiological Control	■			
Instrumentation	■			
Computers	■			
Patient Monitoring	■			
Biomaterials & Prosthetics	■			
Diagnostic Radiology	■			
High-resolution Microscopy	■			
Ultrasound	■			
Minority Access to Research Careers (MARC)				■

National Heart, Lung, and Blood Institute

MISSION

Under the National Heart Act of 1948 and the National Heart, Blood Vessel, Lung and Blood Act of 1972, the Institute plans, conducts, and supports research, clinical trials, and demonstrations relating to the causes, prevention, diagnosis, and treatment of heart, blood vessel, lung, and blood diseases. The research is performed both in the National Heart, Lung, and Blood Institute (NHLBI) laboratories and also, under contracts and grants, at other institutions. In addition, NHLBI provides support for the training and development of new scientists.

GENERAL PROGRAMS

NHLBI uses research grants, program project grants, specialized center grants, Research Career Development Awards, and National Research Service awards to support research work. The three divisions of the Institute offer support in the following program areas.

Heart and Vascular Diseases Programs

Etiology - Arteriosclerosis and Hypertension

This area concerns the basic animal and clinical research in the etiology and pathogenesis of arteriosclerosis and hypertension. Most of the work is being funded through grants; but from time to time, collaborative research through contracts may be appropriate, such as the establishment in 1975 of resource centers to develop and study models of chronic atherosclerosis and hypertension in nonhuman primates.

For further information contact:

Associate Director for Etiology
Division of Heart and Vascular Diseases
National Heart, Lung, and Blood Institute
Bethesda, MD 20205

Lipid Metabolism

In this program, studies are conducted for research into the structure, metabolism, and functions of lipids and lipoproteins as they relate to atherosclerosis. The program objectives include: the evaluation of current techniques as well as the development of improved techniques for the diagnosis of hyperlipoproteinemia; the improvement of detection, diagnosis, and medical care for hyperlipidemic patients; the determination of the prevalence of hyperlipoproteinemia; and the design and implementation of an intervention study of the lipid hypothesis in high risk patients.

For further information, contact:

Chief, Lipid Metabolism Branch
Division of Heart and Vascular Diseases
National Heart, Lung, and Blood Institute
Bethesda, MD 20205

Clinical Applications and Prevention

Primary activities in this area are clinical trials and research into the prevention of heart and vascular diseases, such as the Hypertension Detection and Follow-Up Program, the Aspirin-Myocardial Infarction Study, the Beta-Blocker Heart Attack Trial, and the Multiple Risk Factor Intervention Trial.

Studies of nutritional aspects of heart and vascular diseases and of methods of modifying diets are also conducted in this program.

For further information, contact:

Associate Director
Clinical Applications and Prevention
Division of Heart and Vascular Diseases
National Heart, Lung, and Blood Institute
Bethesda, MD 20205

Epidemiology and Biometrics Research

Epidemiological studies of heart and vascular diseases, as well as biometrical and statistical analyses of research relating to the NHLBI programs, are conducted in populations within the United States and in other countries. The Framingham Heart Disease Epidemiology Study and other prospective studies in Puerto Rico, Japan, Hawaii, Israel, and Yugoslavia are examples of such investigations. Other activities include genetic studies of twins and possible relationships of trace elements in drinking water to heart disease. Grant-supported research into hypertension in the young is underway.

For further information, contact:

Chief, Epidemiology Branch
Division of Heart and Vascular Diseases
National Heart, Lung, and Blood Institute
Bethesda, MD 20205

Cardiology

Ischemic Heart Disease - The objectives of the Ischemic Heart Disease Program are to plan and support research leading to a reduction of death and disability from acute myocardial infarction, chronic coronary heart disease, and sudden cardiac death. This research includes investigations on disease detection, pathophysiological mechanisms, and prophylactic, acute, and rehabilitative therapy. The scope of the area ranges from fundamental research to the clinical aspects of cardiac diseases. Large, multicentered cooperative clinical trials through Specialized Centers of Research or program project grants as well as small, sharply focused studies by individual investigators are encouraged.

For further information, contact:

Associate Director for Cardiology
Division of Heart and Vascular Diseases
National Heart, Lung, and Blood Institute
Bethesda, MD 20205

Devices and Technology - This program focuses on the development of therapeutic and diagnostic devices, instrumentation, and related components. Major emphasis is on the development, the physiological assessment, and the evaluation of pumps, energy conversion, storage, transmission systems, and materials. Research and development of biocompatible materials relevant to cardiovascular devices are of specific interest. The development of noninvasive instrumentation for detection and measurement of atherosclerotic lesions is encouraged.

For further information, contact:

Chief, Devices and Technology Branch
Division of Heart and Vascular Diseases
National Heart, Lung, and Blood Institute
Bethesda, MD 20205

Behavioral Medicine - Program objectives focus on developing the potential of behavioral and biomedical scientists to contribute to behavioral approaches in the prevention, diagnosis, treatment, and rehabilitation of cardiovascular diseases.

For further information, contact:

Chief, Behavioral Medicine Branch
Division of Heart and Vascular Diseases
National Heart, Lung, and Blood Institute
Bethesda, MD 20205

Manpower Branch

This Branch plans, conducts, and directs programs for the development of investigators for research in the area of heart and vascular diseases. The research training may be in fundamental studies of basic processes and functions of the heart and vascular system; or in behavioral studies, including risk modification (e.g., diet, nutrition, smoking), genetics (including studies of populations), and primary or secondary prevention or clinical investigations directed toward long term involvement in research to increase understanding of the various programs of study of the heart and vasculature.

Preventive Cardiology Academic Award

Awards are made to schools of medicine or osteopathy for the dual purpose of improving curricula on preventive cardiology and fostering research and careers in the field. This program is designed to meet the long term, emerging need for highly trained investigators and teachers concerned with prevention of cardiovascular disease. Any school of medicine or osteopathy within the United State or its possession is eligible. Dates for submission of applications are announced annually.

For further information, contact:

Chief, Manpower Branch
Division of Heart and Vascular Diseases
National Heart, Lung, and Blood Institute
Bethesda, MD 20205

Special Emphasis Research Career Awards, Diabetes Mellitus

This program, jointly supported by the National Institute of Arthritis, Metabolism, and Digestive Diseases, is designed to foster the development of investigators with expertise in the broad fundamental and clinical scientific disciplines essential for a multidisciplinary approach to the study of the metabolic, endocrinologic, and cardiovascular aspects of diabetes mellitus.

For further information, contact:

Chief, Manpower Branch
Division of Heart and Vascular Diseases
National Heart, Lung, and Blood Institute
Bethesda, MD 20205

Minority Hypertension Research Development Summer Program

This program is designed to provide minority school faculty members and graduate students with opportunities for research development in the area of hypertension.

For further information, contact:

Chief, Manpower Branch
Division of Heart and Vascular Diseases
National Heart, Lung, and Blood Institute
Bethesda, MD 20205

Lung Diseases Programs

Structure and Function Branch

The Branch supports basic and applied clinical and nonclinical research on the lung and respiratory system, including respiratory function, nonrespiratory function, structure, and growth and development. Also supported are five specialized centers of research on infantile respiratory distress syndrome (IRDS). An ongoing clinical trial is designed to evaluate the efficacy of antenatal steroid therapy in the prevention of IRDS.

For information on specific programs, write to:

Chief, Structure and Function Branch
Division of Lung Diseases
National Heart, Lung, and Blood Institute
Bethesda, MD 20205

Airways Disease Branch

This Branch focuses on research on chronic obstructive lung diseases, asthma, cystic fibrosis, bronchiolitis, and other airways diseases. A contract program on pulmonary changes in cystic fibrosis has been developed in which samples from patients with cystic fibrosis are evaluated to identify cells or tissue sites damaged or altered during various stages of the disease. There is also a specialized center of research programs on chronic airways diseases, which performs clinical and basic research on chronic bronchitis, emphysema, asthma, cystic fibrosis, and bronchiolitis. Two clinical trials are underway to evaluate the effects of nocturnal oxygen and intermittent positive pressure breathing (IPPB) therapy on patients with chronic obstructive lung disease.

For information on specific programs, write to:

Chief, Airways Disease Branch
Division of Lung Diseases
National Heart, Lung, and Blood Institute
Bethesda, MD 20205

Interstitial Lung Diseases Branch

The Branch conducts and directs research on fibrotic and immunologic lung diseases, pulmonary vascular diseases, and respiratory failure. One targeted research grant program is on the anatomical and functional characteristics of pulmonary vascular smooth muscle and the mechanisms that regulate pulmonary vasculature and contribute to pulmonary hypertension and cor pulmonalae. The Branch supports the following specialized centers of research: three centers of pulmonary vascular disease, including pulmonary edema; four centers on fibrotic and immunologic lung disease, with emphasis on hypersensitivity pneumonitis, fibrotic lung disease, and several occupational lung diseases; and three centers on adult respiratory failure.

For information on specific programs, write to:

Chief, Interstitial Lung Diseases Branch
Division of Lung Diseases
National Heart, Lung, and Blood Institute
Bethesda, MD 20205

Prevention, Education, and Manpower Branch

This Branch plans, conducts, and directs a program for the development of trained researchers, and also designs, develops, operates, and coordinates programs to facilitate or implement the transfer of knowledge gained through research into clinical practice. This is done through demonstrations, control programs, and other means. Current work includes programs on continuing education in pulmonary medicine, and self-management systems for children with asthma. A program to develop a mathematical model to translate data from a variety of risk factors into a comprehensive, individual index of risk for chronic obstructive lung disease will also be started. This is a first step in a series of initiatives designed to test the hypothesis that knowledge of the personal risk of developing lung disease can affect a smoker's decision to cease smoking.

Pulmonary Academic Award - Awards are made to schools of medicine or osteopathy for the dual purpose of improving curricula on lung structure, lung function, and lung disease and of fostering research and careers in the field. This program is designed to meet the long term, rapidly growing need for highly trained researchers, clinicians, and teachers who are concerned with respiratory function and disease. Any school of medicine or osteopathy within the United States or its possessions is eligible. Dates for submission of applications are announced annually.

National Pulmonary Faculty Training Program - The National Pulmonary Faculty Training Program is for strengthening pulmonary faculties at schools of medicine and osteopathy that have not yet developed programs that adequately address respiratory diseases. Under Medical School Pulmonary Faculty Training awards, junior faculty members from schools that wish to strengthen their pulmonary academic programs are provided the opportunity to obtain extensive pulmonary training at medical centers where the training environment is supported by this program. Six training centers at medical centers with strong academic programs in respiratory diseases currently receive NHLBI support through Pulmonary Faculty Training Centers grants.

Medical School Pulmonary Faculty Training Award - Any domestic school of medicine or osteopathy with few or no faculty members engaged in full-time teaching, research, and clinical care in pulmonary disease and respiratory disorders, and that has little or no capacity for training young faculty members in the field is eligible to apply for the Medical School Pulmonary Faculty Training award for junior faculty members. A junior faculty member participating in this program must be a physician or scientist with a doctoral degree in a health-related field. The faculty member must also be a citizen of the United States, a non-citizen national of the United States, or admitted to permanent residence in the United States at the time of application. Deadlines for applications are announced by the Division of Lung Diseases.

Collaborative Programs - The research and development program sponsors studies of the structure and function of the lung, chronic bronchitis, emphysema, pediatric pulmonary diseases, fibrotic and immunologic lung diseases, pulmonary vascular diseases, and respiratory failure. Part of this program involves development of techniques and devices for pulmonary diagnosis and respiratory assistance, monitoring, and control. The application of research findings is the objective of the prevention, control, and education program. While most research is supported through grants, contracts complement and supplement research on problems inadequately represented by investigator-initiated research projects and specialized centers. Research programs are administered through the Division's Structure and Function Branch, Airways Diseases Branch, Interstitial Lung Diseases Branch, and Prevention, Education, and Manpower Branch.

Blood Diseases and Resources Programs

The Division of Blood Diseases and Resources plans, directs, and evaluates NHLBI's research grant, contract, and training programs in blood, blood diseases, and blood resources. These programs include basic research, targeted research and development, clinical trials, education, demonstration, and control activities. The Division monitors current activities in light of national needs and seeks to develop and support research into the causes, prevention, diagnosis, and treatment of diseases of the blood. Studies and research into the use of blood and blood components and the management of the nation's blood resources are also encouraged.

Thrombosis and Hemostasis

The program on hemostasis and thrombosis supports basic and applied research on all aspects of the coagulation and fibrinolytic systems, including the biochemistry and physiology of clotting factors and inhibitors, platelets, and the vessel wall. Included in this program is the interrelationship between these systems and other plasma protease systems, such as the kinin and complement systems. Clinical trials are being supported to test the efficacy of anticoagulant and platelet-inhibiting agents for the prevention of venous thrombosis in high-risk subjects. A cooperative clinical study on the development of inhibitors to factor VIII in hemophiliacs is currently being funded through the contract mechanism. Other aspects of hemophilia, including improvements in methods of carrier detection and genetic counseling, are supported in investigator-initiated grants.

NHLBI envisions further projects on the problems associated with current therapy for hemophilia, especially liver disease. Other research areas include the development of specific blood tests designed to identify patients at high risk who develop venous thrombosis, the development of animal models for thrombosis research, and the relation of von Willebrand's disease and thrombosis to atherogenesis.

Red Blood Cell Disorders

The program on red blood cell disorders supports efforts in the collection and purification of erythropoietin as well as clinical trials of chronic iron chelation therapy with desferrioxamine in transfusion-dependent thalassemia major. Other possible activities include cooperative studies of hemolytic anemias and the expansion of the erythropoietin program for distribution of the hormone to the scientific community.

New collaborative programs are announced in the *NIH Guide for Grants and Contracts* and other appropriate publications.

For information on specific programs, write to:

Chief, Blood Diseases Branch
Division of Blood Diseases and Resources
National Heart, Lung, and Blood Institute
Bethesda, MD 20205

Blood Resources and Transplantation

The Blood Resources and Transplantation Program supports research in blood-banking systems management aimed at improving the operations of blood banking nationwide. Other work is directed toward improvement of methods of blood fractionation, development of new fractionation products, improvement of the storage of blood and blood products, proper utilization of blood components in therapy, and elimination of the hazards of blood transfusion (with special emphasis on the problem of post-transfusion hepatitis). This program includes development of blood substitutes and research on the resource aspects of transplantation biology.

For information on specific programs, write to:

Chief, Blood Resources and Transplantation Branch
Division of Blood Diseases and Resources
National Heart, Lung, and Blood Institute
Bethesda, MD 20205

Sickle Cell Disease

The Sickle Cell Program supports basic, clinical, and applied research aimed at increasing understanding of the pathophysiology of sickle cell disease. Basic research is directed at globin synthesis, cell membrane functions, alteration in blood flow, and conformational and structural studies of sickle hemoglobin. Other areas of support include investigation of anti-sickling agents, diagnostic techniques for antenatal and neonatal diagnoses, management of complications, extracorporeal techniques for drug therapy, continuing education programs for professionals and the public, and clinical trials for evaluating treatment modalities for vaso-occlusive crises.

For further information, write to:

Chief, Sickle Cell Disease Branch
Division of Blood Diseases and Resources
National Heart, Lung, and Blood Institute
Bethesda, MD 20205

SPECIAL PROJECTS, PROGRAMS, OR AWARDS

Specialized Centers of Research (SCOR)

The NHLBI initiated this grant program in 1971 to provide for more rapid application of new methodologies for diagnosis, treatment, and prevention of certain diseases. It now provides support in five areas of research: arteriosclerosis, hypertension, lung diseases, thrombosis, and ischemic heart disease. Grants are awarded to institutions that compete successfully in response to detailed announcements published by NHLBI. The Institute assigns a project officer for each area, and the grantees are expected to collaborate with other grantees in the same area of research and to respond to urgent problems posed by the Institute.

National Research and Demonstration Centers

These centers, envisioned as broad efforts to extend the programs of NHLBI, should encompass activities in fundamental research, clinical research, demonstrations of innovations in health care delivery, and education projects for both professionals and the lay public. Such a center is not intended to be a direct-service facility for its community; however, each applicant center is expected to propose its own program based on local resources and interests. The applicant may address any major area of the national program or a combination of areas, if it can be shown that the combination will more effectively meet the goals of the national program. Announcements of competition for these grants are made when funds for the program are anticipated.

National Heart, Lung, and Blood Institute

Heart and Vascular Diseases	Project Grants	Program Project Grants	Specialized Centers	Comprehensive Centers	National Research and Demonstration Centers	Research Career Development Awards	National Research Service Awards	Academic Awards	New Investigator Awards	Cinical Investigator Awards	Prevention, Control, and Education Grants/Contracts	Research and Development Contracts
Atherogenesis	■	■	■			■	■		■	■		■
Hypertension	■	■	■			■	■		■	■	■	■
Lipid Metabolism	■	■				■	■		■	■		■
Clinical Trials	■											■
Epidemiology	■					■	■		■	■		■
Cardiac Diseases	■	■	■		■	■	■		■	■		■
Cardiac Functions	■	■				■	■		■	■		
Devices and Technology	■	■				■	■		■	■		■
Preventive Cardiology	■							■	■	■	■	■
Behavioral Medicine	■					■	■		■	■		■
Prevention, Control, and Education Program							■				■	
Lung Diseases												
Structure and Function	■	■	■			■	■		■	■		■
Airways Diseases	■	■	■			■	■		■	■		■
Interstitial Lung Diseases	■	■	■			■	■		■	■		■
Prevention, Education and Manpower					■	■	■	■			■	
Blood Diseases and Resources												
Thrombosis	■	■	■			■	■		■	■		■
Hemorrhagic Diseases	■	■				■	■		■	■		■
Red Blood Cell Disorders	■	■				■	■		■	■		■
Blood Resources and Transplantation	■	■			■	■	■		■	■		■
Sickle Cell Disease	■	■		■		■	■		■	■		■

National Institute of Neurological and Communicative Disorders and Stroke

MISSION

Programs of the National Institute of Neurological and Communicative Disorders and Stroke (NINCDS) focus on the identification, encouragement, and support of research aimed at improved diagnosis, treatment, and prevention of disorders of the nervous system, the neuromuscular apparatus, the ear, human communication, and the special senses of taste, smell, touch, and pain. Such programs include disorders occurring primarily in youth (cerebral palsy, epilepsy, learning disabilities), in adulthood (head and spinal cord injury, multiple sclerosis, communicative disorders, brain tumors), and in old age (stroke, parkinsonism, otosclerosis, dementia). In no other area of health-related research are fundamental investigations of greater importance.

GENERAL PROGRAMS

Communicative Disorders

This Program includes research on all aspects of hearing, equilibrium, speech, language, and the special senses. Support is provided for studies on anatomical, physiological, biochemical, behavioral, pathological, and clinical bases for normal or impaired hearing, balance, speech, voice, language, taste, touch, and smell.

The Institute supports investigations aimed at the etiopathogenesis, the improved diagnosis, the treatment, the rehabilitation, or the prevention of diseases and disorders of the ear, nose, larynx, and vestibular system. Hearing disorders, speech and vocal pathologies, aphasia, children's language disorders, adverse noise effects, and disorders of touch, taste, and smell are of interest to the Institute. Also of interest are research, development, and evaluation of communicative aids.

The Communicative Disorders Program also operates a contract program which includes studies of otitis media, balance, identification of hearing loss in infants, language and voice disorders, hearing aids, and the effects of noise on people.

For further information, contact:

Director, Communicative Disorders Program
National Institute of Neurological and
Communicative Disorders and Stroke
Federal Building, Room 1C11A
Bethesda, MD 20205

Fundamental Neurosciences

This Program includes those areas of research related to nerve structure and function (membranes, synapses, neurotransmitters) and the basic disciplines (neuroanatomy, neuromuscular biology, etc.). Also included is work on the development of various types of prostheses and on behavioral studies related to sensory deprivation, the limbic system, and central processing. Since all nerve cells presumably work in a similar way, more information on synapses, neurotransmitters, and the nerve membrane is urgently needed.

The Fundamental Neurosciences Program also operates a contract program which includes studies of neural prostheses, biomedical engineering problems, and investigations in brain laterality.

For further information, contact:

Director, Fundamental Neurosciences Program
National Institute of Neurological and
Communicative Disorders and Stroke
Federal Building, Room 120
Bethesda, MD 20205

Neurological Disorders

The focus of this Program, which includes clinical, applied, and basic studies, is on a variety of disorders that affect the nervous system. The program develops and supports research in disorders of early life including: cerebral palsy, metabolic disorders, autism and learning disorders; disorders of adult life including Parkinson's Disease, Huntington's Disease, and the dementias; and demyelinating disorders including multiple sclerosis and amyotrophic lateral sclerosis. Research is also supported in convulsive and paroxysmal disorders including: epilepsy and narcolepsy; neuromuscular disorders including muscular dystrophy, myasthenia gravis, and the peripheral neuropathies; and infectious diseases including slow viruses, encephalitis, and meningites. The Program also supports research in several other neurological disorders.

Through the contract mechanism, the Neurological Disorders Program supports studies in epilepsy, Huntington's disease, neurological disorders of early life, and demyelinating and sclerosing disorders.

For further information, contact:

Director, Neurological Disorders Program
National Institute of Neurological and
Communicative Disorders and Stroke
Federal Building, Room 716
Bethesda, MD 20205

Stroke and Nervous System Trauma

This Program supports research in stroke, head injury, central nervous system tumors, spinal cord injury, plasticity, and regeneration at the basic, applied, and clinical levels. Stroke research includes all aspects of cerebral vascular disorders including pathogenesis, incidence, prevalence, epidemiology, prevention, diagnosis, and therapy. In the area of brain and spinal cord injury, emphasis is placed on the acute, potentially reversible phase of the injury and on a better understanding of coma. In addition, contracts support special clinical research centers in the study of trauma and stroke.

The goal of research on regeneration and plasticity of nerve cells is toward a better understanding of the basic mechanism, the factors influencing repair, and the potential application of such investigation. The Stroke and Trauma Program assigns high priority to research in this area, particularly studies related to the formation of functional synapses by regenerating cells. In addition this Program has an evolving interest in research toward a better understanding of the metabolism, diagnosis, and treatment of brain tumor. A recently developed technique, positron emission tomography, which is capable of elucidating the metabolism, biochemical events, and mechanisms of action in the areas of stroke, trauma, brain tumor, and other neurologic conditions, is receiving considerable emphasis.

For further information, contact:

Director, Stroke and Trauma Program
National Institute of Neurological and
Communicative Disorders and Stroke
Federal Building, Room 8A-08
Bethesda, MD 20205

Biometry and Field Studies Research and Development

The Biometry and Field Studies Contract Program activities include studies of incidence, prevalence, and costs of neurological and communicative disorders, including head and spinal cord injury, multiple sclerosis, epilepsy, and stroke.

For further information, contact:

Chief, Contracts Management Branch
National Institute of Neurological and
Communicative Disorders and Stroke
Federal Building, Room 1014
Bethesda, MD 20205

SPECIAL PROJECTS, PROGRAMS, OR AWARDS

Research Project Grants

These grants are available in all areas to support investigator-initiated projects under the supervision of one or two investigators, and focused on a specific, well-circumscribed problem.

Program Project Grants

Carried out by a group of established investigators, these grants support multidisciplinary approaches to basic and/or clinical areas of neurological or communicative science research.

Clinical Research Centers

The Institute makes a limited number of awards in this area to support broad clinical research programs.

For information on this and the two preceding awards, contact:

Director, Extramural Activities Program
National Institute of Neurological and
Communicative Disorders and Stroke
Federal Building, Room 1016
Bethesda, MD 20205

Research Career Development Awards

These awards are available in any research area in order to provide additional research training and experience for a career in independent research in the neurological and communicative sciences.

Teacher Investigator Awards

Awards are used to prepare future teacher-investigators for careers in pertinent clinical research disciplines, such as neurology, neurosurgery, neuropathology, otopathology, otolaryngology, and speech pathology. Candidates must be nominated by a nonprofit institution, and they must have at least 3, but no more than 6, years of postdoctoral training or experience. Awards offer an opportunity for 5 years of special study or experience tailored to the candidate's needs.

For information on this and the preceding award, contact:

Assistant Director for Manpower Programs
National Institute of Neurological and
Communicative Disorders and Stroke
Federal Building, Room 1020
Bethesda, MD 20205

Individual National Research Service Awards

Individual National Research Service Awards provide 1 to 3 years of postdoctoral research training in the following investigative areas: audiology, clinical investigation, developmental neurology, neuroanatomy, neurobiology, neurochemistry, neuroepidemiology, neuroimmunology, neuropathology and/or otopathology, neuropharmacology, neurophysiology, neuroradiobiology, neurovirology, neural regeneration or plasticity, sensory physiology and biophysics, and speech pathology.

Institutional National Research Service Awards

Grants in this area provide institutions with up to 5 years of research training support in the following four major areas: (1) basic neurosciences, including developmental neurology, neuroanatomy, neurobiology, neurochemistry, neuroimmunology, neuropharmacology, neurophysiology, neuroradiobiology, neurovirology, and sensory physiology and biophysics; (2) clinical neurosciences, including clinical investigation, neuroepidemiology, and neuropathology; (3) basic communicative sciences, including audiology, sensory physiology and biophysics, and speech pathology; and (4) clinical communicative sciences, including audiology, clinical investigation, otopathology, and speech pathology.

For further information, contact:

Assistant Director for Manpower Programs
National Institute of Neurological and
Communicative Disorders and Stroke
Federal Building, Room 1020
Bethesda, MD 20205

Supporting Activities

NINCDS must from time to time seek supporting services and information outside the NIH. Such supporting activities are varied in nature and complexity but include: long term holding of research animals; production and delivery of specific biologic reagents, cell cultures, and antigens; and provision of data processing and information storage and retrieval services; and provision of specialized professional and technical services.

Research and Development Service Procurement Contracts

These contracts are used to provide materials or services specifically needed but not available at NINCDS.

For further information, contact:

Chief, Contracts Management Branch
National Institute of Neurological and
Communicative Disorders and Stroke
Federal Building, Room 1014
Bethesda, MD 20205

Minority Biomedical Support Program

Intended to strengthen the research capabilities of colleges and universities in which there are significant student enrollments from ethnic minority groups, this program is administered by the Division of Research Resources.

National Institute of Neurological and Communicative Disorders and Stroke

Communicative Disorders	Project Grants	Program Project Grants	Specialized Centers	Research Career Development Awards	National Research Service Awards	Teacher Investigator Awards	Research and Development Contracts
Hearing	■	■		■	■	■	■
Speech	■	■		■	■	■	■
Language	■	■		■	■	■	■
Equilibrium	■	■		■	■	■	■
Special Senses	■	■		■	■	■	■
Basic Studies	■	■		■	■	■	
Fundamental Neurosciences							
Bioengineering	■	■		■	■		■
Structure and Function	■	■		■	■		■
Behavior	■	■		■	■		■
Fundamental Studies	■	■		■	■		■
Neurological Disorders							
Developmental Disorders	■	■	■	■	■	■	■
Convulsive Disorders	■	■	■	■	■	■	■
Disorders of Aging	■	■		■	■	■	■
Muscular, Neuromuscular Disorders	■	■		■	■	■	■
Infectious Disorders	■	■		■	■	■	■
Basic Studies	■	■		■	■		■
Stroke and Nervous System Trauma							
Stroke	■	■	■	■	■	■	■
Head Injury	■	■	■	■	■	■	■
Spinal Cord Injury	■	■		■	■	■	■
Growth and Regeneration	■	■		■	■		■
Neoplastic Disorders	■			■	■	■	■
Basic Studies	■	■		■	■		

Division of Research Resources

MISSION

The Division of Research Resources (DRR) administers programs aimed at developing and ensuring the availability of resources essential to the efficient and effective conduct of human health research. DRR programs are primarily institutional in nature and generally support is given through resource grants.

GENERAL PROGRAMS

Animal Resources Program (ARP)

The objective of the ARP is to support resource projects that enable biomedical scientists to use animals effectively in research on human health problems. Special attention is given to animal resource projects that are broadly supportive of the missions of the various NIH components. Objectives are accomplished through a Primate Research Centers Program, a Laboratory Animal Sciences Program, and research contracts. ARP has used research contracts as adjuncts to its resource grant programs to support specific services or to initiate activity in resource development.

Primate Research Centers Program

The Program provides for and conducts biomedical research using a large number and variety of nonhuman primate subjects. Its primary purpose is to develop primate models of human disease conditions and to offer training and expertise in primatology as it relates to medical research. There are seven grant-supported primate research centers collectively concerned with more than 360 research projects on physiology, behavior, and disease.

Laboratory Animal Sciences Program

This Program was established to help research institutions meet their need for higher quality, specialized research animals, for improved care of animals, and for better characterization of animals as biomedical research models. Grants support such activities as: developing and maintaining colonies of special research animals; developing and defining new animal biological models; developing and improving institutional animal resources, including projects to meet the requirements of the Animal Welfare Act of 1970 (PL 91-579) and NIH policies on the care and use of laboratory animals; developing and maintaining laboratory animal disease diagnostic laboratories, including those assuming a regional responsibility; investigating ways to improve the health and well-being of research animals; and developing projects for gathering and disseminating information on research animals, laboratory animal medicine, and technology.

Nonprofit institutions engaged in health-related research and wishing to undertake an animal research project may apply. Grants are made to support a resource for an institution or to fund a major division within an institution. An institution may elect to provide animal resources for several cooperating institutions in its regions. Support is chiefly through grants.

Individual National Research Service Awards

These fellowships are given to individuals for advanced research training in laboratory animal science. Fellowship candidates must have earned a D.V.M., M.D., Ph.D., or equivalent degree. (Fellowships are not awarded for study leading to a professional degree, such as a D.V.M., M.D., or D.D.S.)

Institutional Grants for National Research Service Awards

Grants are awarded to institutions offering training opportunities in laboratory animal medicine and science at the postdoctoral level.

Research Career Development Awards

DRR makes these awards to develop the potential of individuals who are engaged in animal resource-related research. Additional training and experience will be provided for individuals preparing for independent research.

For further information on the Animal Resources Program, contact:

Director, Animal Resources Program
Division of Research Resources
Bethesda, MD 20205

Biotechnology Resources Program

Biotechnology Resources Grants

These grants provide biomedical research investigators with sophisticated tools for research, education, and patient care, including facilities for computing and data processing, high-voltage electron microscopy, mass spectroscopy, nuclear magnetic resonance spectroscopy, and other specialized techniques. Biotechnology grants are awarded for large-scale resources, such as computer centers, made available to investigators in an entire institution or region. Special emphasis is placed on national shareable resources. The Program does not provide for research or training that can be obtained through other NIH programs. Universities, hospitals, and other institutions with programs of biomedical research or related specialized technological capabilities are eligible to apply. Research contracts are awarded occasionally to support special biotechnology resources.

Chemical/Biological Information-Handling (CBIH) Program

The CBIH Program focuses on designing and developing computer-based information-handling tools important to studies of chemical/biological interactions, on making these tools available to the national scientific community in an easy-to-use and highly reliable form, and on collaborating with the users of these tools. The goal is both to refine the tools and also to develop deeper insights into the requirements of the investigative process. Particular emphasis is placed on questions of where and how computer technology and information science can catalyze the emergence of the capability to predict interactions of chemical substances and living systems.

The Biotechnology Resources Program uses contracts to enhance the effectiveness of its grant-supported programs, to facilitate program planning and evaluation, or to develop technological advancements.

For further information, write to:

Director, Biotechnology Resources Program
Division of Research Resources
Bethesda, MD 20205

General Clinical Research Centers Program

General Clinical Research Center (GCRC) grants provide institutional clinical research resources for investigators in widely scattered geographic locations. GCRC's primary goal is to establish a research resource that can be used in the clinical investigation of human health problems and to increase the total body of knowledge of the etiology, progression, prevention, control, and cure of human disease. Program objectives are to establish resources:

- to provide an optimal setting for controlled studies by clinical investigators supported through the NIH and other research-supported programs;
- to encourage and foster interaction among those involved in research in various disciplines;
- to contribute to the maintenance of a national core of qualified clinical investigators; and
- to develop technological and therapeutic advances to ensure the expeditious translation of knowledge into effective patient care.

A General Clinical Research Center is a special ward of from 4 to 30 beds in a hospital where scientists from many departments correlate their laboratory studies with carefully controlled clinical observations and analyses. Each unit has its own paramedical staff, laboratories, diet kitchen, and nursing personnel.

Projects of investigators proposing to use a center are reviewed for scientific merit by an NIH advisory committee and also by a special committee responsible for compliance with Federal policy on the rights of human beings as research subjects. Grantees receive financial support for personnel (professional, secretarial, dietary, laboratory, and nursing), supplies, travel, equipment, hospitalization, and renovation costs. Medical schools, medical school-affiliated hospitals, and other nonprofit medical institutions capable of conducting well-designed studies involving human patients are eligible to apply. Specialized activities are occasionally supported through the contract mechanism.

For further information, contact:

Director, General Clinical Research Centers Program
Division of Research Resources
Bethesda, MD 20205

Biomedical Research Support Program

Biomedical Research Support Grants

These grants are made to complement other forms of grant-in-aid for biomedical and behavioral research. Support from this Program is intended to provide grantee institutions the opportunity to exercise on-site judgement regarding emphasis, specific direction, and content of the research work supported. Thus, Biomedical Research Support grants enable the institution to respond quickly and effectively to emerging opportunities and unpredicted requirements, to encourage innovation, to provide for pilot studies, and to improve both physical and human research resources.

Grants are awarded to schools of medicine, dentistry, osteopathy, public health, pharmacy, allied health, and veterinary medicine, and to other academic institutions, hospital nonacademic research organizations, and state or local health departments. To receive such support, an institution must have been awarded a minimum of $200,000 in PHS research grants during the preceding fiscal year. Other considerations include the extent of health sciences research at the institution, the complexity of the various projects and programs being conducted, and the problems of integrating these programs.

Biomedical Research Development Grants

The purpose of the Biomedical Research Development Grant Program is to expedite the Federal commitment to discover new knowledge necessary for better health by strengthening or expanding health-related research in institutions that have a demonstrated need for an enhanced research environment. The improvement of manpower training for the clinical professions or for health-related research is also supported. Awards are limited to $100,000 per year for a three-year period.

For further information on the Biomedical Research Support programs, contact:

Director, Biomedical Research Support Programs
Division of Research Resources
Bethesda, MD 20205

Minority Biomedical Support Program

Minority Biomedical Support grants are intended to strengthen the research capability of colleges and universities in which there are significant enrollments from ethnic minority groups, such as Blacks, Hispanics, American Indians or Alaskan natives, Asians, or Pacific Islanders. Involving both faculty and students, these grants provide minority students with a broader base of preparation for careers in biomedical science research, and also develop new strengths in the sciences in these schools. Minority Biomedical Support grants may be used to support:

- released time for faculty members to engage in research;
- exploratory research and full-scale research activities through the purchase of equipment, supplies, technical assistance, etc., as needed;
- undergraduate and graduate students working in research through their involvement in a faculty member's research; and
- resources, such as the operation of central research resources not related solely to any one specific project or program, but essential to the entire biomedical research activity of the institution; or the provision of ancillary research services.

To be eligible for a grant under this program, an applicant must be one of the following: a public or private nonprofit university, four-year college, or other institution offering undergraduate, graduate, or health profesional degrees, with a significant (but not necessarily more than 50 percent) enrollment from ethnic minorities; a two-year college with a traditionally high (more than 50 percent) minority enrollment; or an Indian tribe which has a recognized governing body and which performs substantial Government functions, or an Alaska Regional Corporation as defined in the Alaska Native Claims Settlement Act. The applicant also must be located in a State, the District of Columbia, Puerto Rico, the Virgin Islands, the Canal Zone, Guam, American Samoa, or the Trust Territory of the Pacific Islands.

For further information, contact:

Director, Minority Biomedical Support Program
Division of Research Resources
Bethesda, MD 20205

Division of Research Resources

	Resources Grants	National Research Service Awards	Research and Development Contracts
Laboratory Animal Sciences and Primate Research	■	■	■
Biotechnology Resources	■		■
General Clinical Research Centers	■		■
Biomedical Research Support	■		
Minority Biomedical Support	■		

National Library of Medicine

MISSION

The mission of the National Library of Medicine (NLM), through programs authorized by the Medical Library Assistance Act (PL 89-291), as amended, is to assist the health community in finding ways for more rapid and widespread communication of biomedical information. In general, the mechanism of assistance is the grant-in-aid.

GENERAL PROGRAMS

Research, Development, and Demonstration Program

This program provides grant support for basic and applied research, technical development, and demonstration projects for improving the communication of health information. General areas of interest include health science librarianship, information science, and computer and communications technology.

New Investigator Research Awards are available to support individuals who have completed their doctoral training and are seeking grant support for the first time for their own research projects.

Research Career Development Awards are available to established health information researchers who have demonstrated outstanding potential for contributing to the improvement of knowledge transfer and information access.

Training in Health Sciences and Computer Technology

NLM provides grant support for the training of health professionals and others who are interested in integrating computer technology and related information sciences into all aspects of the health sciences and health care. Grants provide trainee stipends, tuition, materials, and program expense support at institutions that have both strong computer resources and academic health science facilities.

Special Scientific Projects

To cope with the ever-increasing volume and complexity of health literature, grants are offered to eminent health scientists or practitioners for developing major scholarly works which interpret or synthesize broad topics of health interest. An example is the recent work by Kelly M. West, *Epidemiology of Diabetes and Its Vascular Lesions,* published in 1978 by Elsevier. The grants are usually for one year, with the expectation that a book-length manuscript will then be submitted to a reputable scientific publisher.

Medical Library Resources Grants

Resource project grants enable health science libraries to develop and expand their information services. Grants are awarded to institutions with health libraries, and the librarian is to be the project director. This program also awards Medical Library Improvement Grants, which are small grants made to health science libraries in community institutions, such as hospitals, or to consortia of such institutions for developing libraries and improving services.

Regional Medical Library (RML) Program

NLM awards contracts to 10 regional medical libraries, which coordinate a variety of services for a major geographic area. No additional regional libraries are planned at present. A major goal of the RML system is to improve access to information.

Biomedical Publications

In the area of biomedical publications, grants are awarded for the following reasons:

- to support nonprofit biomedical scientific publications;
- to aid in the compilation, writing, editing, and publication of critical reviews and monographs;
- to fund studies in the history of medicine, medical librarianship, and health information science;
- to support secondary literature tools such as bibliographies, atlases, manuals, etc.;
- to encourage translations of current and historical biomedical monographs;
- to support publication of significant biomedical symposia;
- to provide temporary financial aid for periodical publications.

For further information on all programs, contact:

Associate Director for Extramural Programs
National Library of Medicine
Bethesda, Md 20209

National Library of Medicine

	Project Grants	Research Career Development Awards	New Investigator Research Awards	Training Grants (Institutional)	Resource Grants	Contracts
Research, Development and Demonstration Program	■	■	■			
Training in Health Sciences and Computer Technology				■		
Special Scientific Projects	■					
Medical Library Resources					■	
Regional Medical Library Program						■
Biomedical Publications	■					

Fogarty International Center for Advanced Study in the Health Sciences

MISSION

The Fogarty International Center (FIC) was created by the Congress in 1968 to provide a focus and an organizational mechanism for enhancing the role of NIH in international cooperation in all aspects of biomedical research. Specifically, the Center:

- provides a locus for the assembly of outstanding scientists in research;
- furthers international cooperation and collaboration in the life sciences through its research programs, conferences, and seminars;
- provides postdoctoral fellowships for research in the United States and abroad and supports senior scientist exchanges between the United States and other countries under bilateral agreements;
- coordinates NIH activities and functions concerned with the health sciences at the international level; and
- serves as a focal point for foreign visitors to the National Institutes of Health.

GENERAL PROGRAMS

Opportunities for U.S. Scientists to Study Outside the U.S.

The Senior International Fellowship Program

Initiated in 1975, this Program provides outstanding U.S. biomedical scientists, at mid career, with an opportunity to go abroad to study and share their expertise. To be eligible, an individual must be a faculty member at an educational institution with graduate level programs in the biomedical sciences or a staff member at a private nonprofit research organization. A candidate must provide evidence of productive scholarship and recognized stature in his or her field. The award is intended to be a career-enhancing, educational experience for the individual and to benefit both the foreign and U.S. nominating institutions.

U.S. institutions nominate an individual for a fellowship. The application requires the endorsement of the applicant's proposed program by the president or other appropriate official of the nominating institution. A letter of invitation is also required from an appropriate individual at the foreign host institution attesting to the willingness of the institution to accept the applicant and outlining any benefits which may accrue. A nominee must be a U.S. citizen, hold a full-time appointment on the staff of the nominating institution, have at least 5 years experience beyond the doctorate or professional medical degree in research, teaching or other relevant professional work, and possess the linguistic abilities necessary for learning and for profitable discussion with colleagues in the country proposed for collaboration. An award provides up to $24,000 per year (prorated for shorter periods), round-trip travel for the individual, and an allowance of $2,000 per year administered by the U.S. institution for use by the fellow at the host institution. Appropriate supplementary funding from other sources is permitted.

In cooperation with the appropriate NIH institutes, FIC administers *Special Emphasis Fellowships* as a part of the Senior International Fellowship Program. Currently, Special Emphasis Fellowships are available in aging, arthritis, diabetes, tropical diseases, and epilepsy. The guidelines and conditions governing the regular Senior International Fellowship Program apply to the Special Emphasis Fellowships.

French National Institute of Health and Medical Research Postdoctoral Fellowships

In collaboration with the French National Institute of Health and Medical Research (Institut National de la Santé et de la Recherche Médicale), FIC accepts and screens applications of U.S. scientists for French National Institute fellowships. Final selections are made by the French National Institute from the list of nominations forwarded by the FIC. Stipends are equivalent to the salary of a junior grade French National Institute researcher, about $14,000 per year. Two such fellowships will be awarded each year.

Swiss National Science Foundation Postdoctoral Fellowships

The Swiss National Science Foundation (Schweizerischer Nationalfonds zur Forderung der wissenschaftlichen Forschung), in cooperation with FIC, accepts applications from U.S. scientists for postdoctoral fellowships in Swiss laboratories. Applications are screened by FIC and forwarded to the National Foundation, which makes the final selection. Awards include a stipend equivalent to $15,500 to $18,000, allowances of $2,400 for the spouse, and $745 for each child. Travel costs will be paid for the fellows and their families.

Swedish Medical Research Council Postdoctoral Fellowships

Working with the Swedish Medical Research Council (Medicinska Forskningsradet), FIC accepts applications from U.S. scientists for postdoctoral fellowships to be taken in Swedish laboratories. Applications are screened by FIC and forwarded to the Medical Research Council which makes the final selection. Awards include a stipend equivalent to $10,000 to $13,600 per year, and travel costs for the fellows and their families.

Opportunities for Foreign Scientists to Study in the U.S.

Fogarty Scholars-in-Residence Program

Internationally recognized scientists from the U.S. and abroad are invited to NIH for 3 months to 1 year to work on projects in the health sciences related to a specific institute or an NIH-wide interest. Appointments are made on the recommendation of an advisory panel representing the NIH institutes. The participants work with the staff of all NIH institutes and research divisions pertinent to their research, as well as with staff members of outside academic institutions.

International Research Fellowship Program

This program offers fellowships to outstanding and relatively young biomedical scientists from many participating foreign countries. Each participating country screens and recommends candidates through a nominating committee made up of senior biomedical scientists of the country. Candidates are then reviewed by a panel of scientists appointed by the NIH. Each year approximately 88 new awards are made and about 40 are renewed. Fellowship recipients come to U.S. laboratories under the sponsorship of a preceptor who provides not only the necessary laboratory space for the individual's research program, but also guidance for the project.

Individuals must be citizens of the participating country, hold a doctorate or equivalent degree, submit a proposed plan of research, and arrange for a sponsor who is a senior scientist in a U.S. laboratory and who is willing to participate in the development of the appropriate research protocols. Begun in fiscal year 1958, this program has involved more than 1,700 participants, many of whom have made outstanding contributions to the health sciences.

International Neurosciences Fellowship Program

The International Neurosciences Fellowship Program was started in 1977 in cooperation with the National Institute of Neurological and Communicative Disorders and Stroke (NINCDS). This program, administered by FIC, is designed to enhance the skills of junior or midcareer foreign health professionals in the field of neuroscience. Applications for the fellowships are solicited by the World Health Organization and recommended applications are forwarded to NINCDS and FIC for final selection. Six to eight fellowships are to be awarded annually for study under the preceptor of the recipient's choice in the United States. Applications are available from the Fellowships Officer, World Health Organization regional offices.

International Tropical Diseases Research Fellowships

The National Institute of Allergy and Infectious Diseases (NIAID) and the FIC, in cooperation with the UNDP/World Bank/WHO Special Program for Research and Training in Tropical Diseases, have made available a limited number of postdoctoral fellowships for advanced training in tropical diseases research in the United States. The initial program emphasis will be on the following six diseases: malaria, schistosomiasis, filariasis, trypanosomiasis, leishmaniasis, and leprosy.

The fellowships are for junior or midcareer professionals with a doctoral degree in medicine or the biomedical sciences. Good knowledge of, and the ability to communicate in, the English language are essential. Applicants must agree to return to their own countries to take up a public health or academic position immediately upon completion of the training.

Fellowships will normally be for a period of 1 year; if necessary they can be for shorter periods, but no less than 6 months. Fellowships may, in special circumstances, be extended for an additional year.

Collaborative Research under Bilateral Agreements

FIC oversees the participation of the NIH, together with other U.S. agencies, in bilateral cooperative agreements between the U.S. Government and a number of other countries. Such agreements include not only the scientist exchanges and Special Foreign Currency Program activities described below, but also, in some instances, the conduct and coordination of cooperative research projects which are undertaken through regular support mechanisms. Coordination is achieved through joint workshops and conferences as well as visits between principal investigators. Countries with which major agreements of this nature are currently in effect include Egypt, France, the Federal Republic of Germany, Hungary, India, Israel, Italy, Japan, Poland, Romania, the Soviet Union, Spain, and Yugoslavia. Participation by individual institutes of NIH is dependent upon particular scientific areas of interest with respect to these countries.

Health Scientist Exchange Programs with Poland, Romania, U.S.S.R., and Yugoslavia

The joint cooperative programs provide for the short and long term exchange of health and biomedical scientists with the above countries. Although the terms are different in the individual programs, in general, the senders support international travel, while the receivers pay for in-country costs. Visits may be from 1 to 12 months depending on the program and nature of the work to be accomplished.

U.S. health and biomedical specialists who have particular scientific interests with respect to any of these countries for which a period of work, observation, or consultation in that country would be of mutual benefit may submit a proposal for consideration as an exchange visitor. In addition to such special requirements as may pertain to a particular country's program, the individual must be a U.S. citizen or permanent U.S. resident, hold an advanced degree (normally doctorate) in one of the health sciences or related fields, have professional experience in health or biomedical fields appropriate to the proposed study, and be affiliated with a U.S. public or private nonprofit educational, research, or clinical institution. Those considering the submission of a proposal should first contact the Fogarty International Center for further information with respect to the terms and requirements of the particular country of interest.

NIH-French National Center for Scientific Research Program for Biomedical Scientific Collaboration

Under an agreement between NIH and the French National Center for Scientific Research (Centre National de Recherche Scientifique), the two organizations share in the support of U.S. scientists selected to work at laboratories in France and of French scientists selected to work at U.S. laboratories. The purpose of the program is to advance biomedical knowledge through cooperation between U.S. and French scientists in fields of special interest to the NIH and the French National Center. Approximately five scientists from each country will be exchanged annually.

The type of activity undertaken with a host laboratory may include the conduct of a basic or clinical research study, familiarization with or utilization of special techniques and equipment not otherwise available, and related cooperative efforts. The program does not provide support for activities which have as principal purposes brief observational visits, attendance at scientific meetings, or independent study.

Eligibility requires that the individual be a U.S. citizen or permanent resident; hold an advanced degree (normally doctorate) in one of the health sciences or related fields, have professional experience in health or biomedical fields appropriate to the proposed study; and be affiliated with a U.S. public or private nonprofit educational, research, or clinical institution. Working knowledge of the French language is highly desirable. Those considering the submission of a proposal should first contact FIC for further information with respect to the terms and requirements.

Special Foreign Currency Program

The Special Foreign Currency Program (sometimes referred to incorrectly as the PL 480 Program) uses U.S. owned excess foreign currencies to support biomedical research, translation, documentation, and dissemination of information in the health sciences. Not only must the research activities be within the program interests and responsibility of NIH but they must also be of interest to the host country, its institutions, and research scientists. The countries where excess currencies are currently available are Burma*, Egypt, Guinea, India, Pakistan, and, with limitation, Poland.

A unique feature of the program is its collaborative character. Research proposals must represent a joint effort of the U.S. and foreign scientists within their areas of professional interest and competence. Research must be conducted in conformance with all DHHS regulations, such as those concerned with protection of human subjects and recombinant DNA studies.

The currencies are not convertible to U.S. currency, and therefore no dollars are available for such items as equipment. Funds may not be used without written consent of the foreign government. Central coordinating committees and channels exist in all countries to provide a review for scientific merit and concurrence with national policies, procedures, and priorities concerned with health and science, as well as political, economic, and other factors.

The program comprises projects covering a wide spectrum of biomedical research. Emphasis is placed on utilization of resources unique to the host country, whether they be cultural, ethnic, anthropological, or ecological, as well as trained manpower, laboratory facilities, and prevalence and variety of disease. Projects concerned with investigation of the more fundamental aspects of biomedical problems, as well as clinically oriented and epidemiological studies are acceptable.

A research proposal may originate with a scientist in either the U.S. or a foreign country. The collaborator in the foreign country, where the research will be done, must submit an application to NIH through channels designated by the foreign government via the U.S. Embassy. The award will be made to the foreign institution. Scientific staff of the following organizations are eligible: U.S. academic and nonprofit research institutions, foreign academic and research institutions, and U.S. Government research agencies.

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*Very difficult to establish programs

Conference Support

FIC provides information and financial support for individuals and groups planning scientific meetings. Through FIC, scientists and administrators from the various NIH institutes are brought together with their counterparts from other government agencies and from the universities, foundations, and the private sector to plan and conduct conferences. These meetings range from small workshops defining new standard research material to large international congresses conducting a broad review of knowledge in multidisciplinary areas. Conferences are also convened at NIH and elsewhere to stimulate interest in new and developing research areas.

Conference organizers requesting financial support for meetings should submit a grant application a year in advance of the conference or as soon as reliable information on the scientific program, choice of speakers, and budgetary needs can be provided. Sufficient detail should be provided concerning the justification for the conference, as well as information on the timeliness and usefulness of the meeting to the scientific community. In general, where funding is provided, it amounts to only partial subsidy towards total conference costs. A guideline for developing a grant application is available from FIC. Groups requesting conference sponsorship can submit proposals to the Division of Research Grants, NIH, or directly to the FIC.

Inquiries about FIC programs should be directed to:

Director
Fogarty International Center
Bethesda, MD 20205

Fogarty International Center for Advanced Study in the Health Sciences

	Senior International Fellowship Program	French National Institute of Health and Medical Research Postdoctoral Fellowships	Swiss National Science Foundation Postdoctoral Fellowships	Swedish Medical Research Council Postdoctoral Fellowships	Fogarty Scholars-in-Residence Program	International Research Fellowship Program	International Neurosciences Fellowship Program	International Tropical Diseases Research Fellowships	Health Scientist Exchange Programs	NIH-French National Center for Scientific Research Program for Biomedical Scientific Collaboration	Special Foreign Currency Program
U.S. Scientists Work/Study Abroad	■	■	■	■					■	■	
Foreign Scientists Work/Study in U.S.					■	■	■	■	■	■	
Collaborative Research					■	■				■	■

Trans-NIH Programs

The NIH conducts and sponsors research in several areas that span the mission of most, if not all, of its organizational components. For these trans-NIH topics, the Director, NIH, generally appoints a coordinating committee, composed of representatives of all the appropriate Bureaus, Institutes, and Divisions (BIDs). The committees provide a forum for exchange of information, a mechanism for coordination of individual programs, and a focus for policy development. Their activities foster and supplement the continuing development of new research approaches in the participating NIH components.

The chairman of the coordinating committee for each area serves as a principal advisor to and representative of the Director, NIH, on all matters relating to that area. The chairperson and other members may also participate in related interagency coordinating committees established by law or administrative action.

This selection describes the scope of activities within the three largest trans-NIH research programs: Diabetes, Arthritis, and Nutrition.

TRANS-NIH DIABETES RESEARCH PROGRAM

Diabetes, which is a major public health problem, affects as many as 10 million Americans. Its prevalence in the population appears to be increasing. It is a unique disease in that it affects virtually every biological system of the body, resulting in increased morbidity and mortality due to a wide variety of pathologic and functional disorders. The enormous burden that diabetes inflicts upon the individual and society is evident from the fact that the debilitating and chronic physical, mental, and financial consequences of this disease cost Americans billions of dollars annually.

Because of the systemic nature of this disease, diabetes research programs fall within the scope of almost all of NIH's BIDs. Thus, the trans-NIH Diabetes Research Program was established in 1978 to facilitate cooperation in diabetes-related research programs and activities among all of the awarding offices.

The trans-NIH Diabetes Research Program is administered by the Associate Director for Diabetes within the National Institute of Arthritis, Metabolism and Digestive Diseases (NIAMDD). Through the NIH Diabetes Coordinating Committee (DCC), comprised of representatives from each of the other NIH components involved in diabetes research, the Program is responsible for:

- developing and keeping up-to-date a coordinated NIH plan to address the needs and opportunities in diabetes research, research training, data collection and analysis, and information transfer;
- identifying research opportunities in all NIH and Federal diabetes-related activities;
- stimulating and coordinating the effort to gather epidemiologic data relevant to diabetes; and
- serving as an information resource and the focal point for contact with other agencies or organizations.

Since its inception, the trans-NIH DCC has initiated several activities. In 1978, eight institutes issued an NIH-wide program announcement soliciting applications for research grants in diabetes and diabetes-related areas. These same institutes, in 1978, solicited applications for research grants on the epidemiology of diabetes mellitus. In 1979, four NIH institutes, in cooperation with the National Institute of Mental Health of the Alcohol, Drug Abuse and Mental Health Administration, published a program announcement to encourage research grant applications on the behavioral and psychosocial aspects of diabetes.

The DCC has also started research manpower development programs. Two new awards emphasizing research on diabetes mellitus have been initiated and several others are planned for the near future. NIAMDD and the National Heart, Lung, and Blood Institute (NHLBI) support a Special Emphasis Research Career Award (SERCA) on the cardiovascular, endocrinologic, and metabolic implications of diabetes mellitus. NIAMDD and the National Institute of Child Health and Human Development (NICHD) also sponsor a SERCA for diabetes mellitus, which supports research in the obstetrical, perinatal, and pediatric aspects of the disease. In addition, each institute supports research training in a broad range of biomedical, behavioral, and epidemiologic scientific disciplines related to diabetes through National Research Service Awards.

Participants in the trans-NIH Diabetes Program work closely with the National Diabetes Data Group. The Data Group, under the auspices of the National Diabetes Advisory Board, serves as the focus within NIH for the collection, analysis, and evaluation of epidemiological data that are fundamental to the development of sound scientific and public health policies related to diabetes and its complications. Members of the trans-NIH Diabetes Program also collaborate with employees of the National Diabetes Information and Education Clearinghouse, which is the national focus for diabetes information activities.

Through the combined efforts of the NIH BIDs, the DCC, the National Diabetes Data Group, and the National Diabetes Information and Education Clearinghouse (located in the NIAMDD), significant advances have occurred in several important areas of diabetes research. Some notable advances include:

- genetic and epidemiologic studies that provide greater insight into the heterogeneous character of diabetes and clearly separate the genetics of the insulin-dependent form (juvenile-type) of diabetes from the non-insulin dependent form (adult onset-type);
- the development of reliable and sensitive methods to measure precisely the binding of insulin to specific receptors on cells, thus providing a new opportunity to study in detail the normal mechanism of insulin action and its derangement in diseases such as diabetes and obesity;
- studies demonstrating that photocoagulation with either the argon laser or the xenon arc is effective in inhibiting the progression of diabetic retinopathy and reducing the risk of severe loss of vision; and
- the use of recombinant DNA techniques to successfully direct bacterial synthesis of rat insulin and human insulin; these studies demonstrate potential implications for increasing the supply of insulin, alleviating allergies to insulin, synthesizing other essential hormones, and contributing to fundamental research on the nature of gene regulation.

Further information about the trans-NIH Diabetes Program can be obtained from:

Diabetes Programs Chief
National Institute of Arthritis, Metabolism, and Digestive Diseases
Westwood Building, Room 626
Bethesda, MD 20205

TRANS-NIH ARTHRITIS AND RELATED MUSCULOSKELETAL DISEASES RESEARCH PROGRAM

In its various forms, arthritis is probably the most widespread crippling, disabling, and painful disease in the United States. In one way or another, it directly or indirectly affects almost every American; arthritis knows no age limitations. Few Americans are aware that the diseases associated with arthritis may affect not only bones and joints, but also the blood vessels, the kidneys, the skin, the eyes, and the brain. Few realize that arthritis can be a serious result of many infections and that the complications from some types of arthritis are fatal. The economic, clinical, emotional, and social impacts of arthritis are enormous.

In 1977, the NIH Arthritis Coordinating Committee (ACC) was established with representatives from each of NIH's BIDs having research interests in one or more aspects of the rheumatic diseases. The activities of the ACC were meant to complement those of the arthritis Interagency Coordinating Committee (AICC), created by the National Arthritis Act. Thus, the Committee's efforts are directed toward:

- strengthening and improving the NIH system for reporting on arthritis and related research, and coordinating these efforts with other Federal agencies;
- identifying opportunities for joint sponsorship of workshops and symposia in selected areas of arthritis research;
- providing a focus to stimulate productive research in this area; and
- exploring opportunities to promote the sharing of facilities and other resources for arthritis research.

The trans-NIH Arthritis Program is administered by the Associate Director for Arthritis within the NIAMDD. Based on the mission interests and research program plans of the participating NIH BIDs, as well as on the recommendations of the National Commission on Arthritis, the ACC selected the following areas as being worthy of special emphasis and future development:

- studies of the interface of immunogenetic determinants and infection, both bacterial and viral, in diseases such as Reiter's Syndrome and other spondylitic diseases;
- examinations of the role of cell-mediated immunity in pathogenetic mechanisms;
- studies of immune complexes and their pathogenetic significance in polyarteritis and other vasculitides;
- investigations of mediators of inflammation in pathogenesis and the elucidation of drug actions on these processes;
- basic studies of mucopolysaccharides, collagen, and other fibrillar proteins of connective tissue;
- research on neurogenic, humoral, and immunologic regulatory determinants, a crucial area for understanding Raynaud's phenomenon and scleroderma;
- studies of polymyositis and dermatomyositis;
- research on heritable connective diseases (Marfan's and Ehlers-Danlos syndromes) to pinpoint discrete chemical lesions and enzyme defects; and
- research in the broad area of back disorders.

Coordination among the NIH components in these research areas has been achieved through joint program announcements, workshops, and conferences. In June 1979, a workshop on collagen metabolism was sponsored by the NIAMDD and the National Institute of Dental Research (NIDR) to obtain new directions for research in osteogenesis imperfecta. In 1980, a conference on research strategies for back disorders will be jointly sponsored by NIAMDD and NICHD.

The bulk of NIH funding for arthritis-related research is in the form of research project grants to individual investigators. These awards are complemented by grants for 24 Multipurpose Arthritis Centers across the Nation. As mandated by the National Arthritis Act, the centers conduct basic and clinical research; professional, patient, and public education programs; and community based demonstration programs. In addition, the General Clinical Research Centers of the Division of Research Resources (DRR) support over $2,000,000 in arthritis-related research annually.

Further information about the trans-NIH Arthritis and Musculoskeletal Diseases Program can be obtained by contacting:

Associate Director for Arthritis, Bone and Skin Diseases
National Institute of Arthritis, Metabolism and Digestive Diseases
Building 31, Room 9A35
Bethesda, MD 20205
(301) 496-4353

Arthritis Program Director
National Institute of Arthritis, Metabolism and Digestive Diseases
Westwood Building, Room 403
Bethesda, MD 20205
(301) 496-7326

TRANS-NIH NUTRITION RESEARCH PROGRAM

Advances in knowledge of human biochemistry and physiology have begun to place clinical nutrition on a sound scientific base. A large number of deficiency states, consequences of inborn errors of metabolism, and food-related diseases are now understood, treatable, and often preventable. However, there remain many unanswered questions on the relationship of diet to health and disease, especially cancer and other chronic diseases and aging. Current and future investigations of these relationships will advance our understanding of human nutrition.

The NIH is the primary agency in the Federal Government that conducts and sponsors research and training in nutrition as it relates to health maintenance, human development throughout the life cycle, disease prevention, and disease treatment. The NIH Nutrition Program involves all of NIH's awarding BIDs and is coordinated through its Nutrition Coordinating Committee (NCC).

The NCC consists of representatives from the participating NIH components as well as liaison members from other agencies with the Public Health Service, from the Office of the Assistant Secretary for Health, and from the Office of Science and Technology Policy in the Executive Office of the President. The mandate of the NCC is to continuously stimulate, encourage, and recommend the necessary funding for research and training in nutrition in order to define precisely the role of nutrition in the promotion of health and the prevention of disease. The trans-NIH Nutrition Research Program is administered by a Special Assistant to the Director, NIH.

The NCC is the administrative focus both for the coordination and review of nutrition research and research training priorities and also for the development of the NIH program in biomedical and behavioral nutrition research and training. The coordination activity of the NCC not only minimizes duplication of effort among the NIH components, but also identifies areas where research and research manpower needs in nutrition require further nurturing. Program announcements and requests for applications developed by the NCC and sponsored by more than one BID encourage activity in areas of perceived need. NCC representatives, working with their particular BID, also develop program announcements, Requests for Proposals (RFPs), and Requests for Applications (RFAs) on an individual institute basis to augment the work of the NCC.

The Nutrition Program includes both intramural and extramural research and research training. The NIH intramural program in nutrition research is carried out primarily at the Clinical Center on the NIH campus in Bethesda; the National Institute on Aging (NIA) program is located at the Gerontology Research Center in Baltimore, and the National Institute of Environmental Health Sciences (NIEHS) conducts research at Research Triangle Park, North Carolina. The major component of the nutrition program is the extramural research that is sponsored throughout this country in universities, medical schools, dental schools, veterinary schools, schools of nutrition, and schools of public health.

The NCC has developed a master nutrition plan for NIH which emphasizes research in four critical areas; clinical nutrition throughout the life cycle, the role of nutrition in disease development, prevention of disease, and treatment of disease. In addition to identifying research priorities, the nutrition plan includes emphasis on the transfer of modern nutrition technology, nutrition education for professionals and the public, training, and coordination of all these activities.

Each year, the NCC prepares a *Report of the NIH Program in Biomedical and Behavioral Nutrition Research and Training* for the past fiscal year and a *Report on Spending Plans in Nutrition Research and Training* for the coming fiscal year. In addition, the NCC sponsors a major annual conference or workshop on nutrition and the publication of the proceedings. The Committee maintains an NCC Office, which provides information on nutrition that is requested by other Federal agencies, the scientific community, and the concerned public.

For further information on the NIH nutrition program or for copies of the publications described above, contact:

Chairman, Nutrition Coordinating Committee
National Institutes of Health
Building 31, Room 4B59
Bethesda, MD 20205

Abbreviations

AIA - Academic Investigator Award
BID - Bureau, Institute or Division (of NIH)
CIA - Clinical Investigator Award
DHHS - Department of Health and Human Services
DRG - Division of Research Grants
DRR - Division of Research Resources
FIC - Fogarty International Center
IRG - Initial Review Group (grant applications)
MARC - Minority Access to Research Careers
MBS - Minority Biomedical Support Program
NCI - National Cancer Institute
NEI - National Eye Institute
NHLBI - National Heart, Lung, and Blood Institute
NIA - National Institute on Aging
NIAID - National Institute of Allergy and Infectious Diseases
NIAMDD - National Institute of Arthritis, Metabolism and Digestive Diseases
NICHD - National Institute of Child Health and Human Development
NIDR - National Institute of Dental Research
NIEHS - National Institute of Environmental Health Sciences
NIGMS - National Institute of General Medical Sciences
NIH - National Institutes of Health
NINCDS - National Institute of Neurological and Communicative Disorders and Stroke
NIRA - New Investigator Research Award
NLM - National Library of Medicine
NRSA - National Research Service Award
PHS - Public Health Service
RCDA - Research Career Development Award
RFA - Request for Applications (grants)
RFP - Request for Propsals (contracts)
SERCA - Special Emphasis Research Career Award
SRG - Scientific Review Group (grant applications and contract proposals)

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